VOL. XXXVI. No. 5 MAY 1951

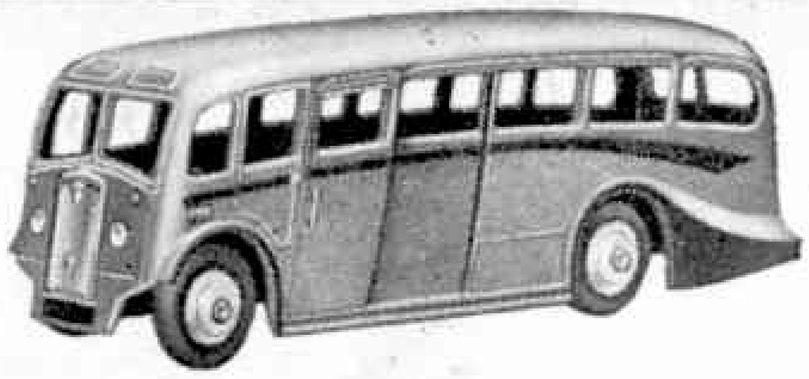
MECCANO MAGAZINE

FIGHTERS AFLOAT

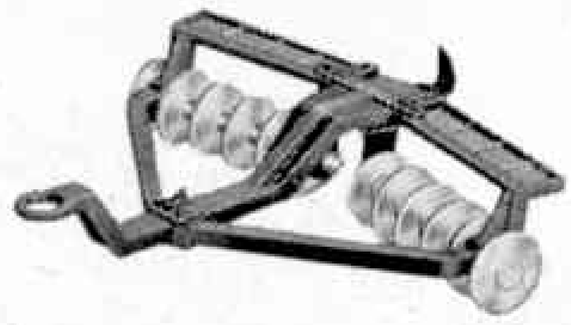
9D.

DINKY TOYS

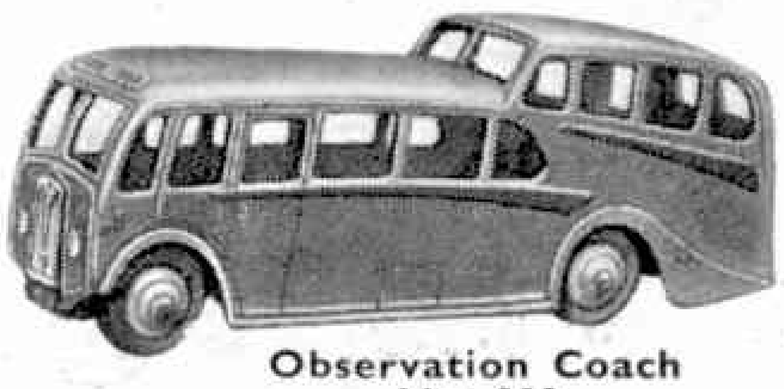
Electric Dairy Van
No. 30v



Luxury Coach
No. 29g

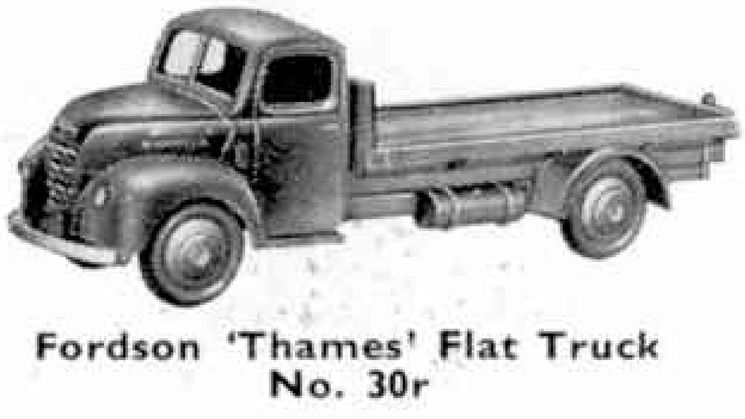


Disc Harrow
No. 27h



Observation Coach
No. 29f

Guy 4-ton Lorry
No. 511

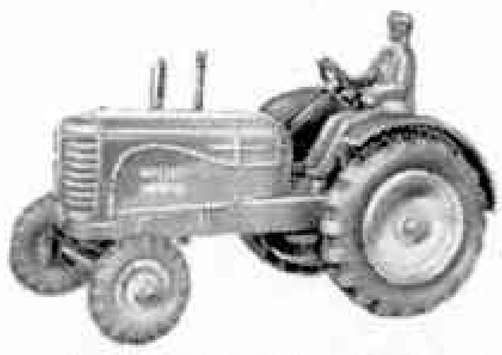


Fordson 'Thames' Flat Truck
No. 30r

Double Deck Bus
No. 29c

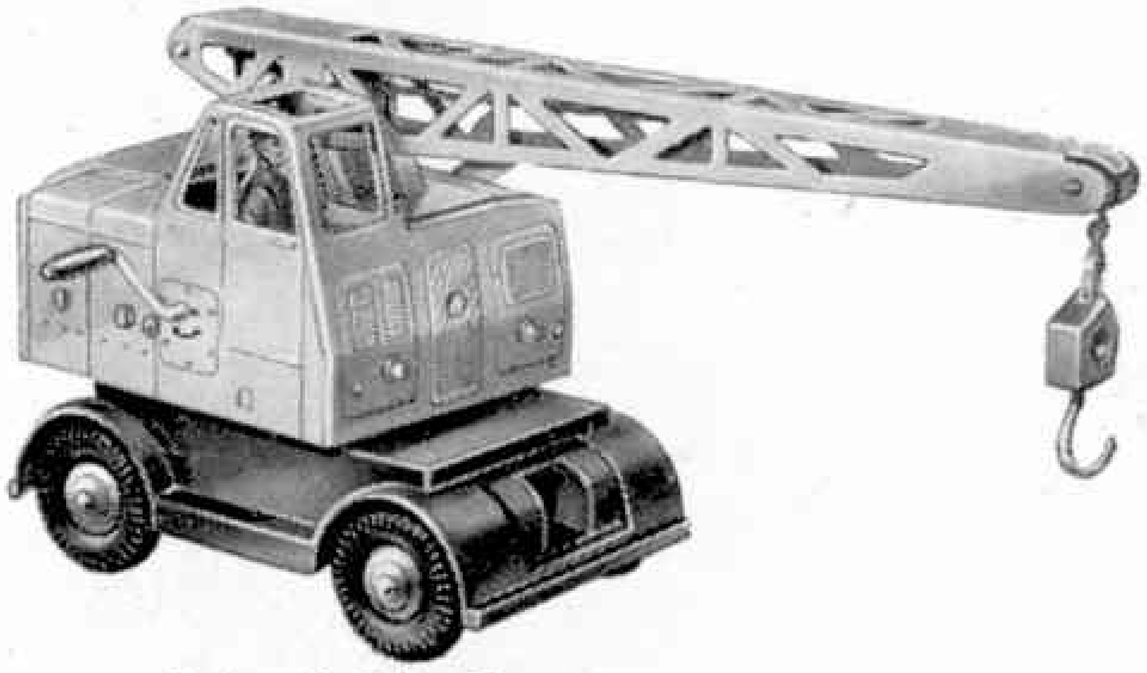
Rear Tipping Wagon
No. 30m

Rover 75 Saloon
No. 140b

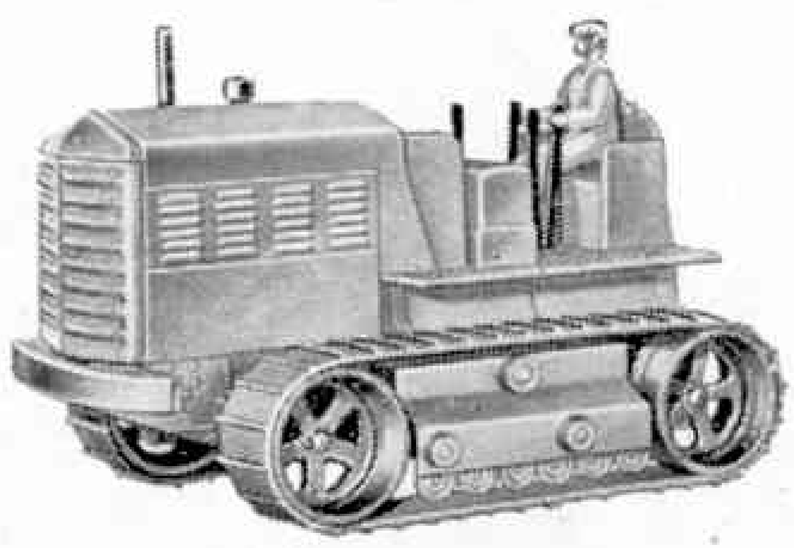


Massey-Harris Tractor
No. 27a

Austin 'Atlantic' Convertible
No. 140a



Coles Mobile Crane
No. 571

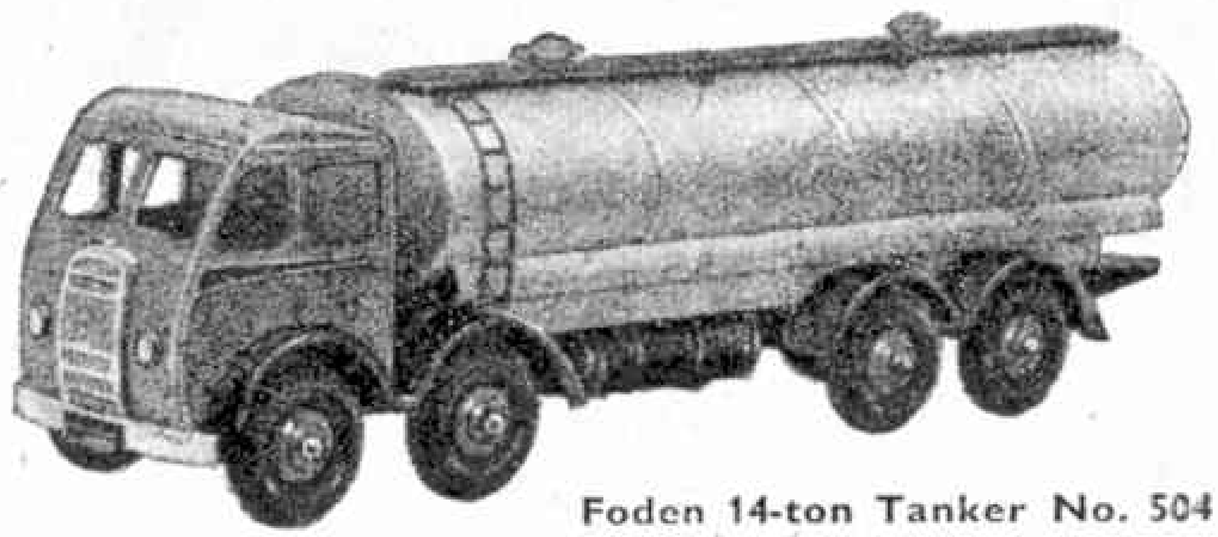


Heavy Tractor
No. 563

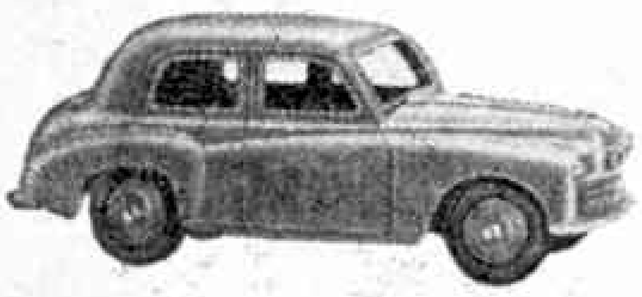
MADE IN ENGLAND BY MECCANO LIMITED

DINKY TOYS

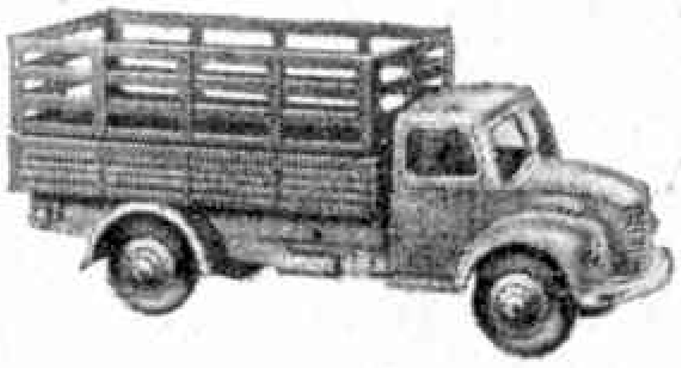
Austin Covered Wagon
No. 30s



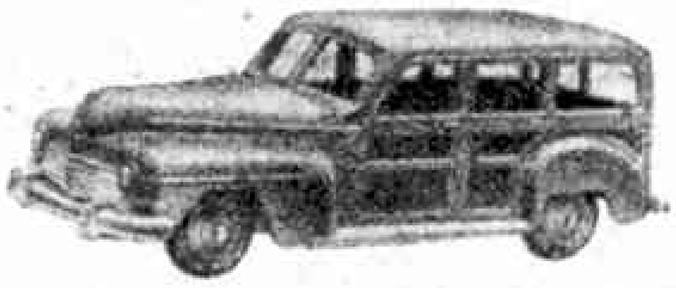
Foden 14-ton Tanker No. 504



Hillman Minx Saloon
No. 40f

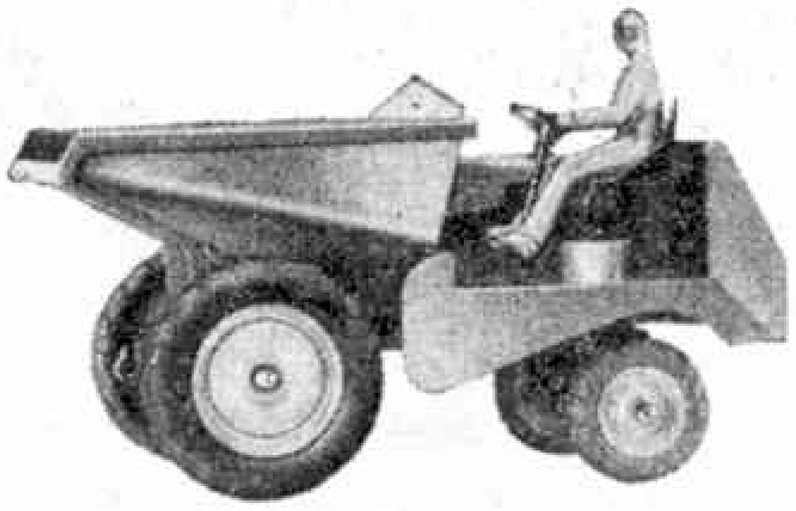


Farm Produce Wagon
No. 30n

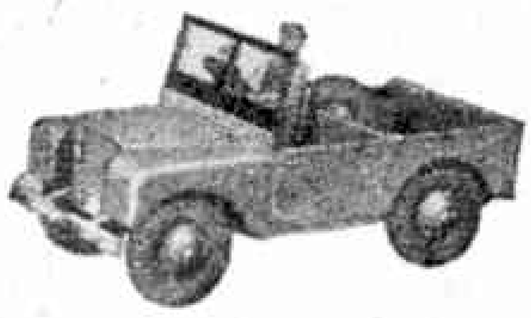


Estate Car
No. 27f

Bedford End Tipper
No. 25m



Dumper Truck No. 562

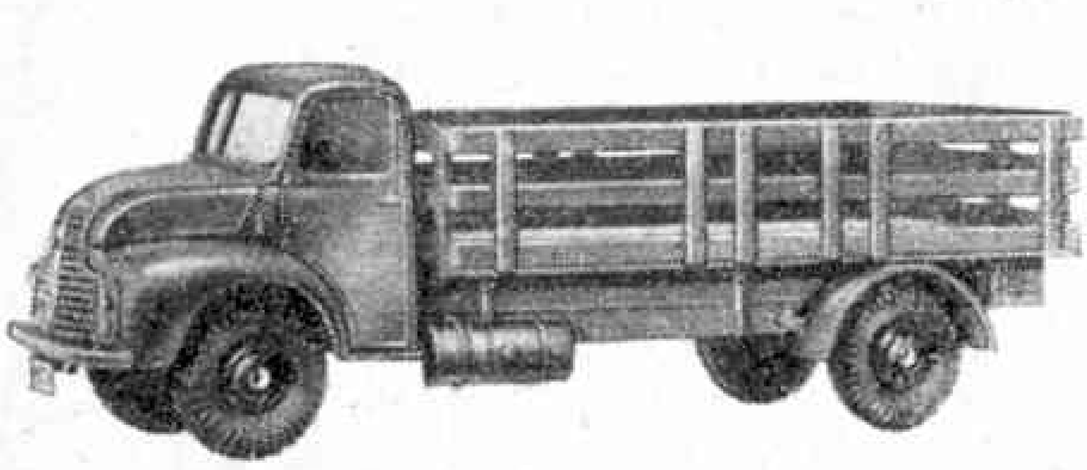


Land-Rover
No. 27d

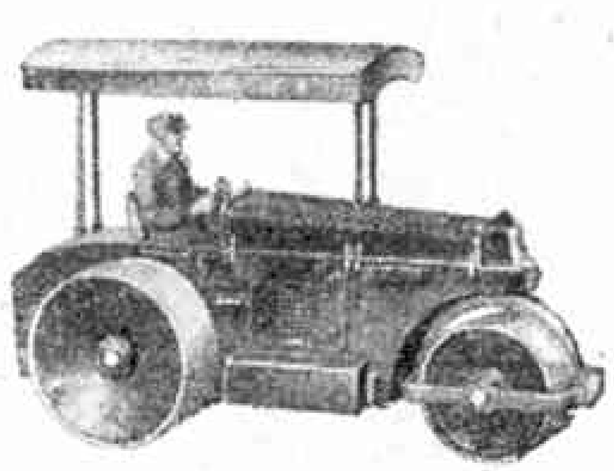
The Standard "Vanguard"
Saloon, No. 40e

Trojan 15 cwt. Van "Esso"
No. 31a

Breakdown Lorry
No. 25x



Leyland 'Comet' Lorry
No. 531



Aveling-Barford Diesel Roller
No. 25p

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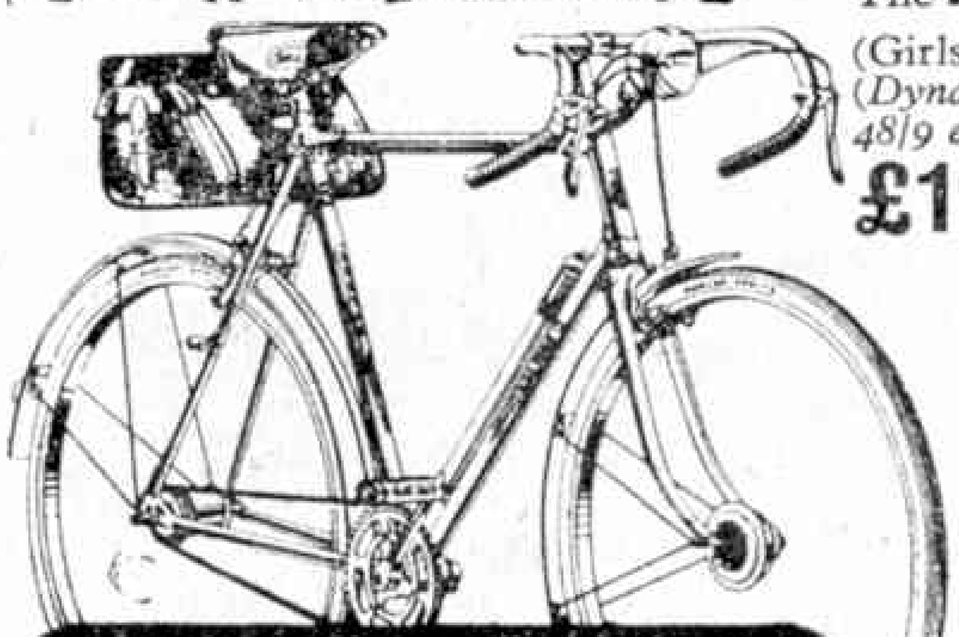

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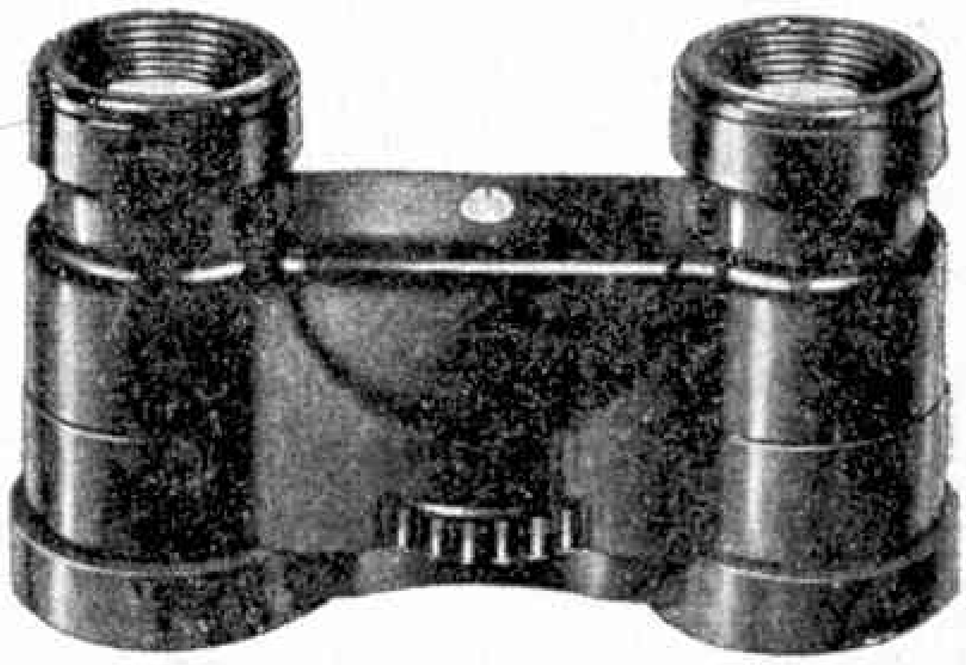

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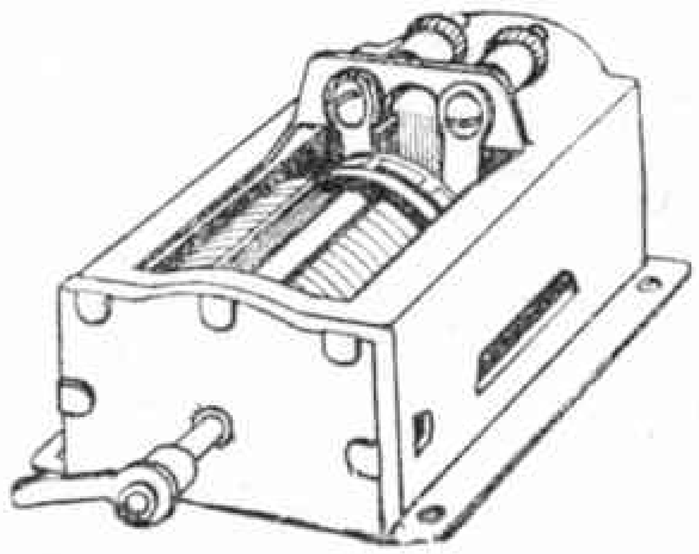

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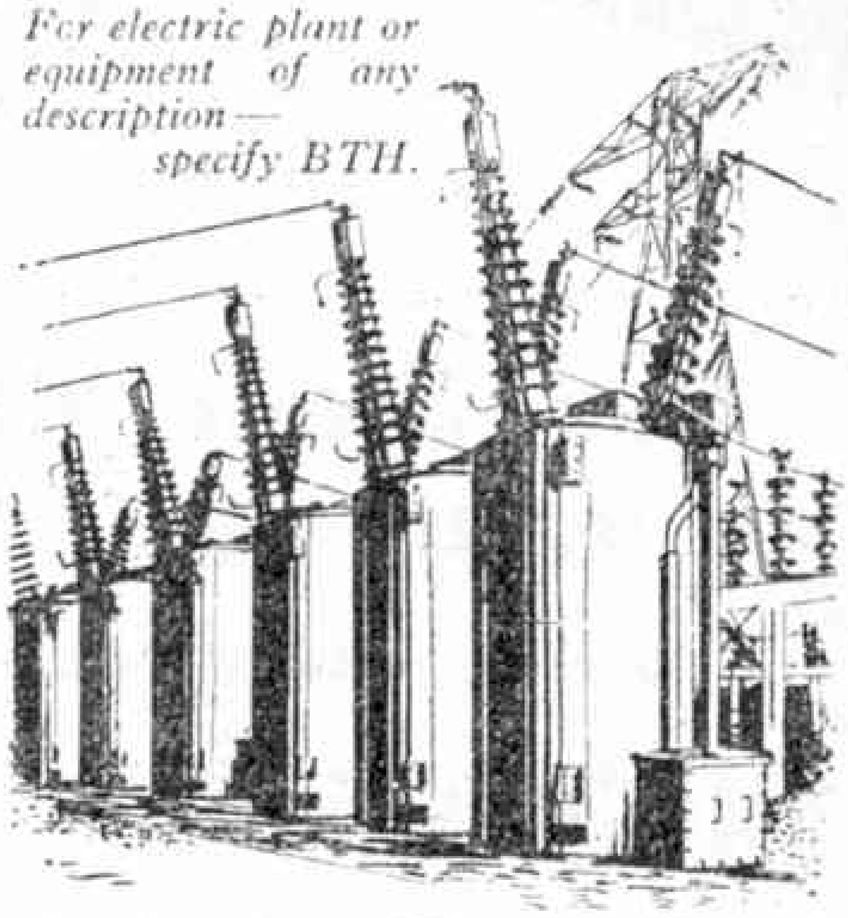

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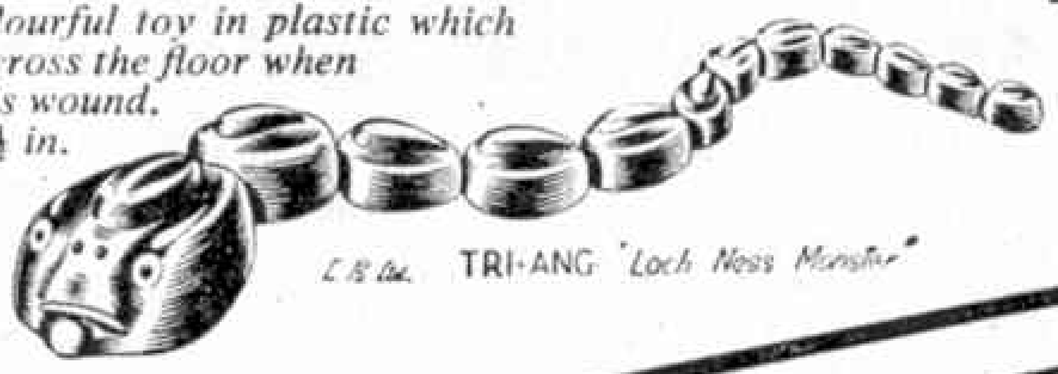
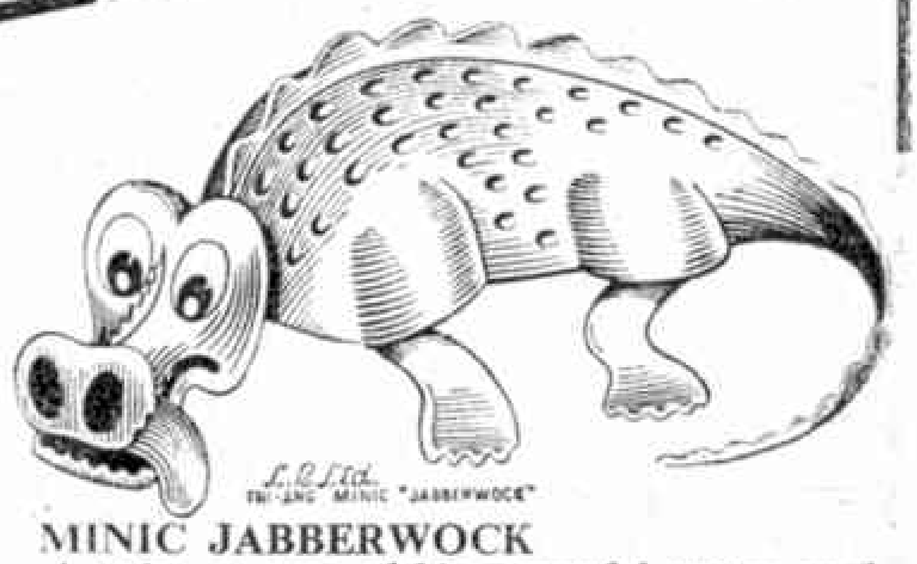


MINIC CLOCKWORK NOVELTIES



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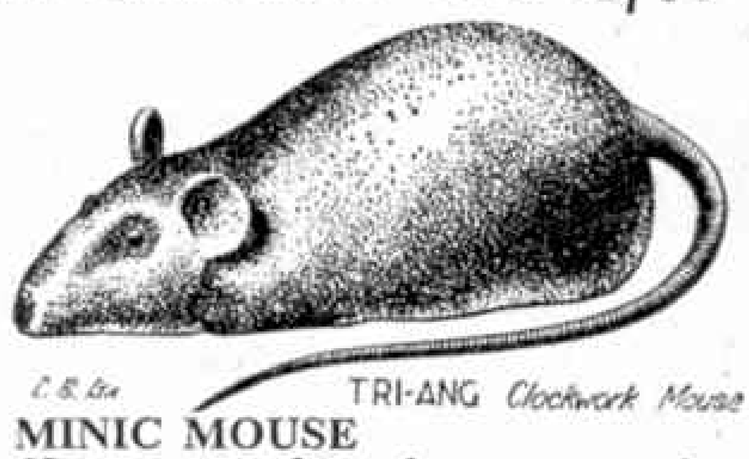

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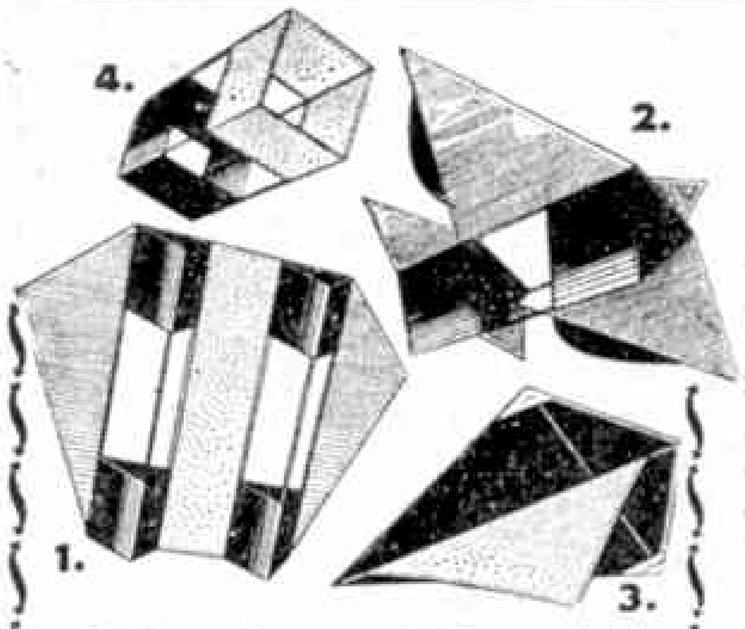

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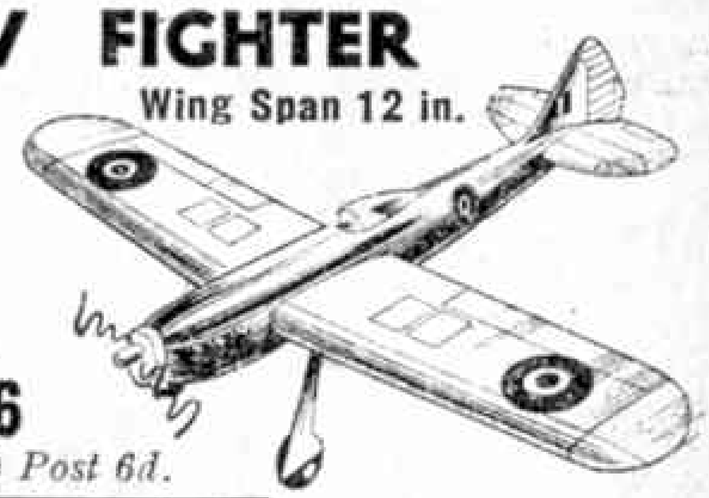

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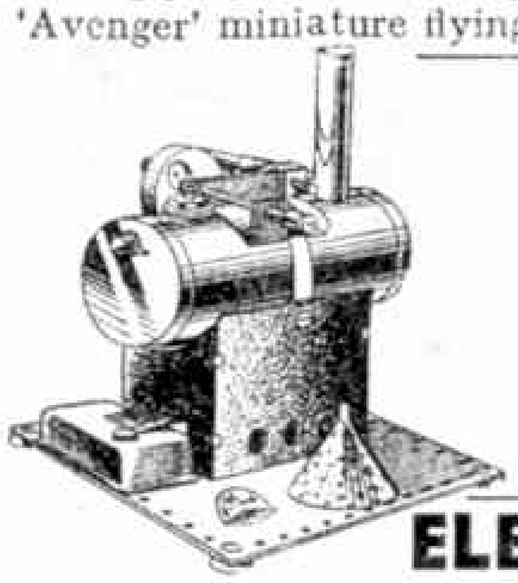

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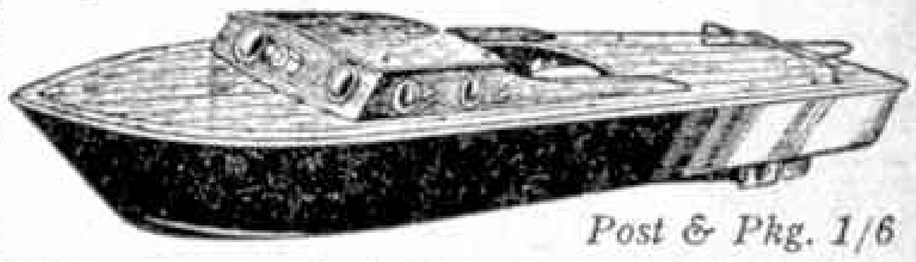

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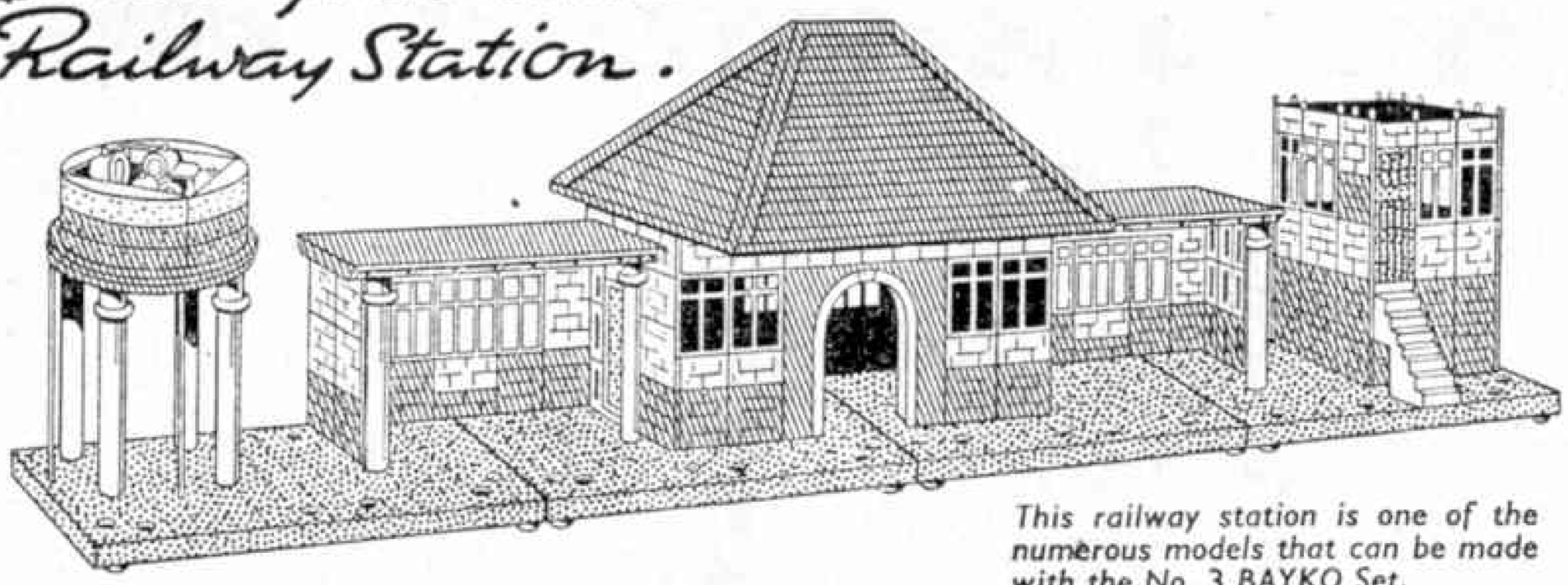

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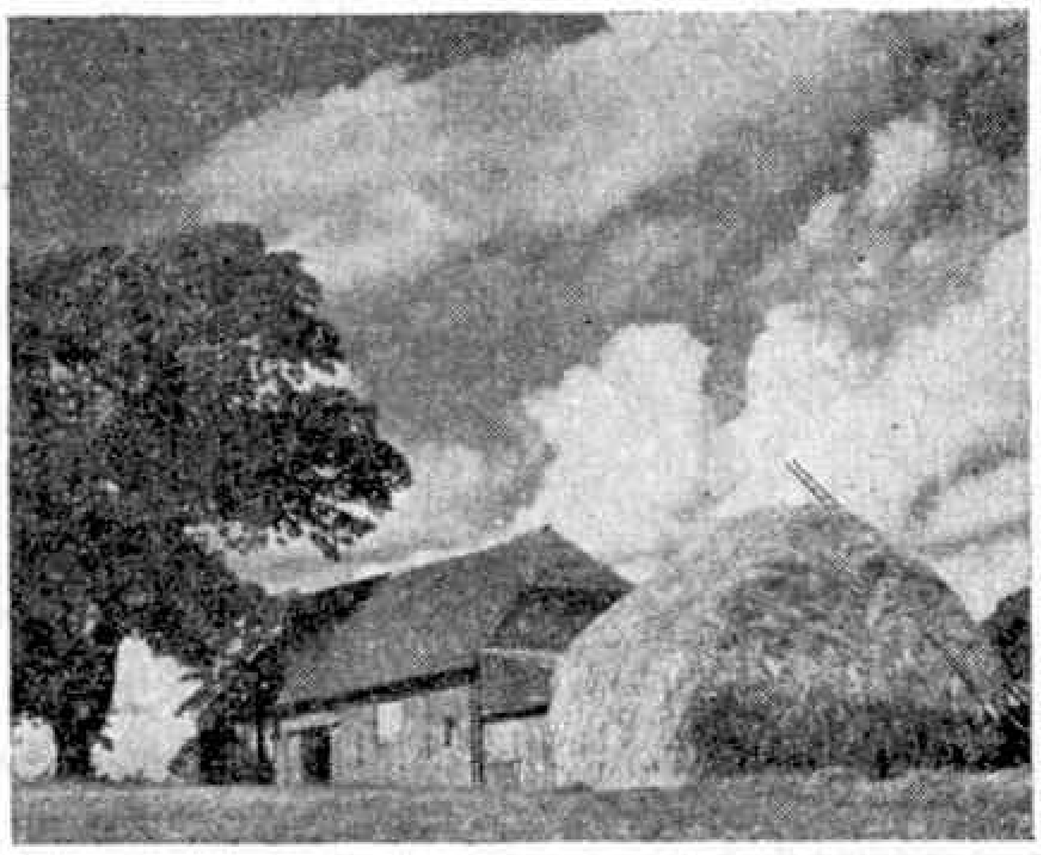
GIBRALTAR ROW, LIVERPOOL 3

For faces and places



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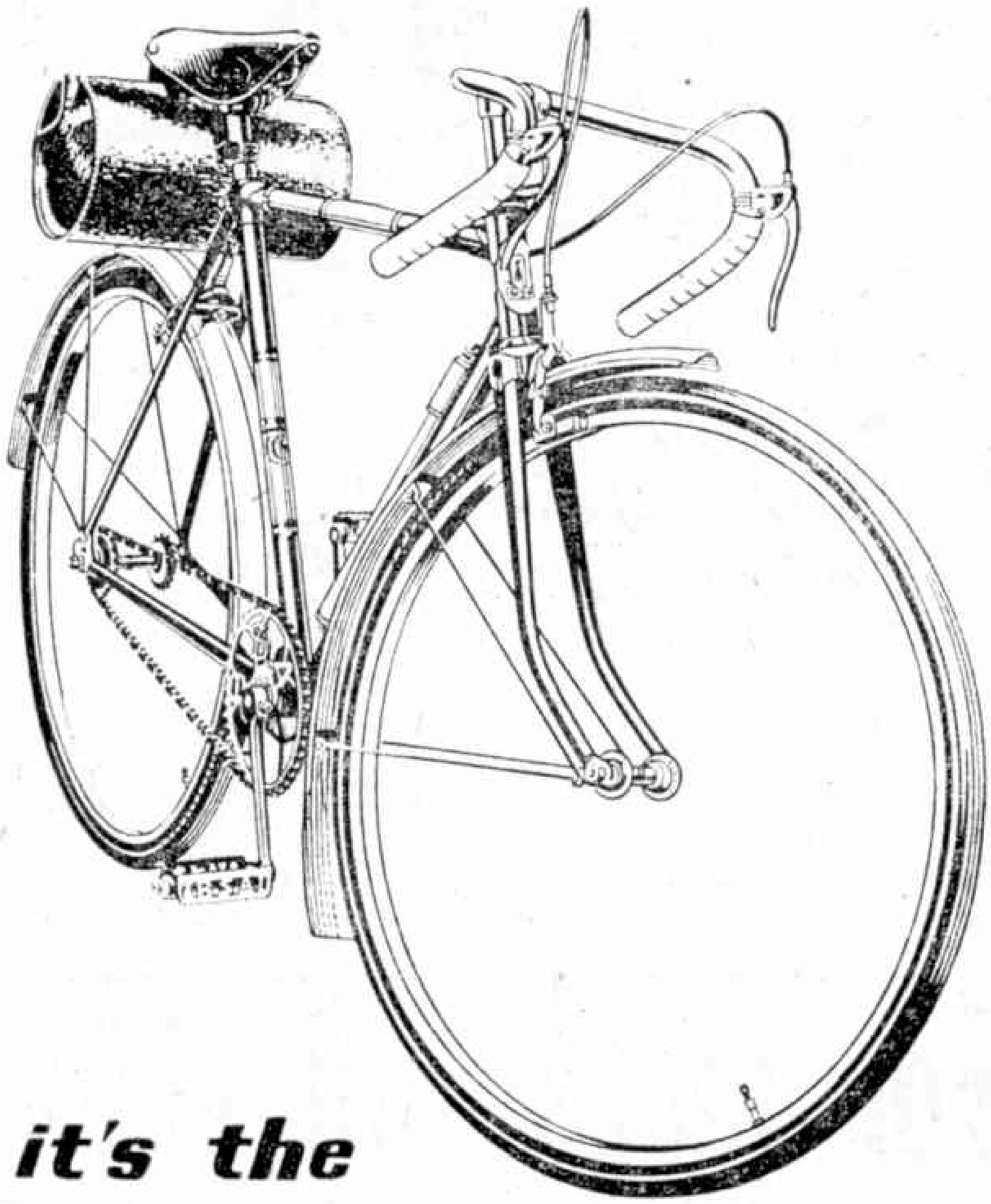

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MECCANO MAGAZINE

Editorial Office:
Binns Road
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England

Vol. XXXVI
No. 5
May 1951

With the Editor

Jet Decade

Ten years ago this month a small single-seat aeroplane known simply as the Gloster E28/39 took off for the first time, piloted by the late Flt. Lt. P. E. G. Sayer. There was nothing about it in the newspapers next day, because Britain had been at war for 20 months and first flights were secrets shared by only a select few in the Ministry of Aircraft Production, the fighting Services and the aircaft industry.

As a result, a certain young R.A.F. pilot, flying one of our newest and fastest fighter 'planes, was justifiably surprised a few weeks later when a strange little aeroplane, with a hole where its propeller ought to have been and another hole in its tail, not only overtook him but, after its pilot had waved cheerily, proceeded to race on ahead, apparently quite effortlessly.

Most likely the fighter pilot's routine report on landing produced whispered hints from his Intelligence Officer about what he had seen. But it was not until January 1944 that the British public, and the enemy, were told officially that Britain had built and flown successfully a jet-propelled aeroplane known as the E28/39, and that a fighter development of this aircraft was already in production. Six months later the Royal Air Force received its first "Meteors."

To-day, all that is history, and we have fighters, bombers and even air liners that can surpass by far the speed of the E28/39 and those first "Meteors." Jet propulsion has, in fact, become almost as familiar a part of our lives as the 8.20 train to Town or the *"Queen Mary."* Developed as a means of hastening victory in war, it has become one of the wonders of our age, and one of which we in Britain can be proud, for the little Gloster E28/39 and its revolutionary Whittle engine opened up a completely new era in the conquest of the air, just as surely as did the historic Wright biplane in 1903.

* * * *

The sight of giant waves breaking over sea walls or sweeping up our beaches is very impressive to us when we are enjoying our summer holidays, but for this grandeur we have to pay when great gales rage round our coasts and sweep away valuable land. These ravages of the sea are described and illustrated in a fine article on *"Britain's Changing Coastline"* that will be included in next month's *"M.M."*

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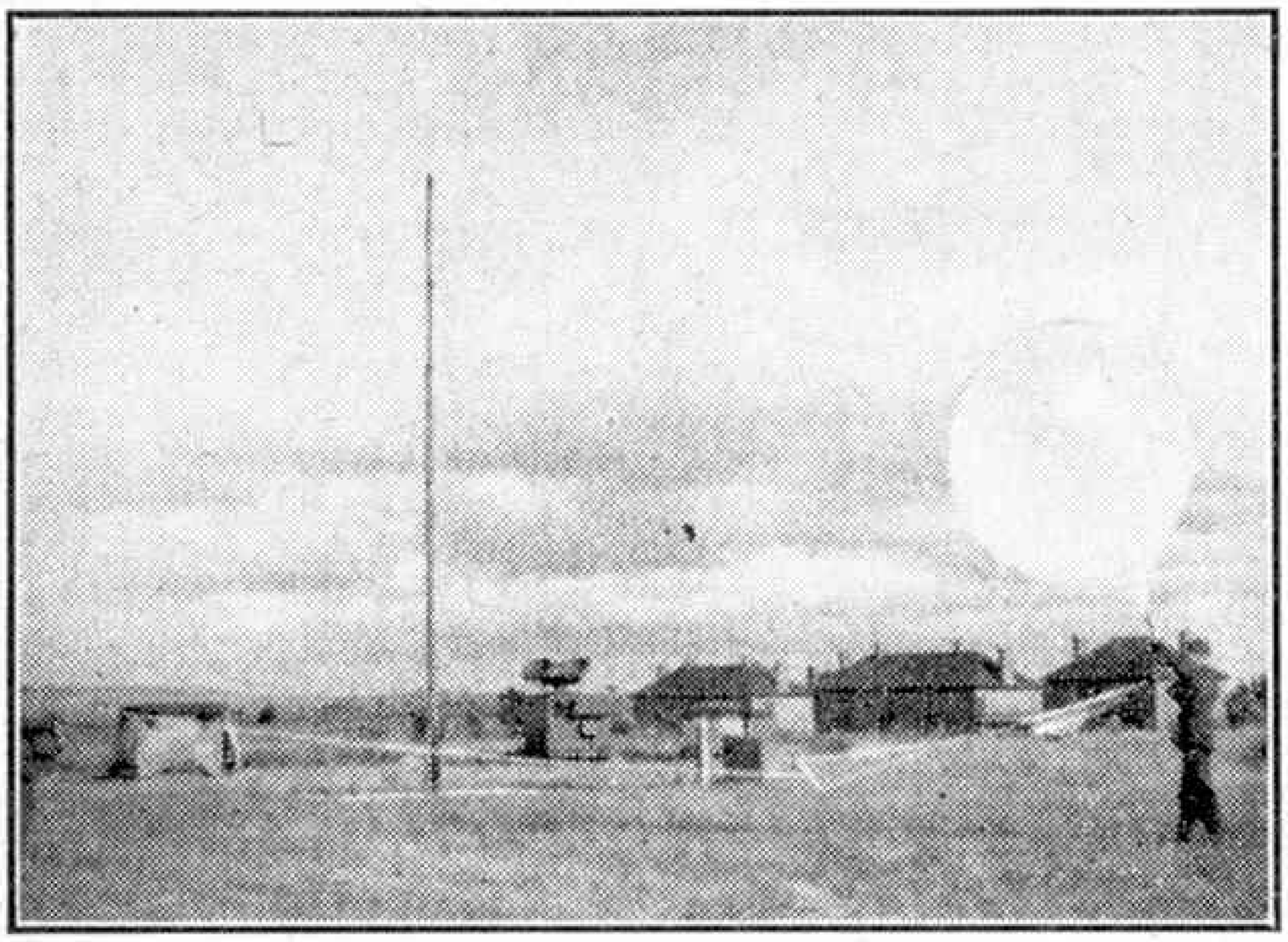
Seasonal Weather Forecasts

By David Bowen, F.R.Met.S.

MOST people were inclined to think that a mild winter in 1950–51 was too much to expect after the three mild ones that had preceded it, but Imcos Ltd., meteorological consultants in London, predicted that this winter would not be long and severe. In most places they said that it would be about average, although not quite so mild as the previous one and with a few more gales than usual.

Some cold snaps were expected, with fairly frequent frost days and some falls of snow in January. But these spells of inclement weather were to be interrupted by milder periods, making prolonged frost or snow-covered ground unlikely, except in hilly or mountainous districts. More cold spells followed by mild periods were foretold for February, with the cold spells of this month the hardest of the winter, but on the other hand a late spring was not anticipated.



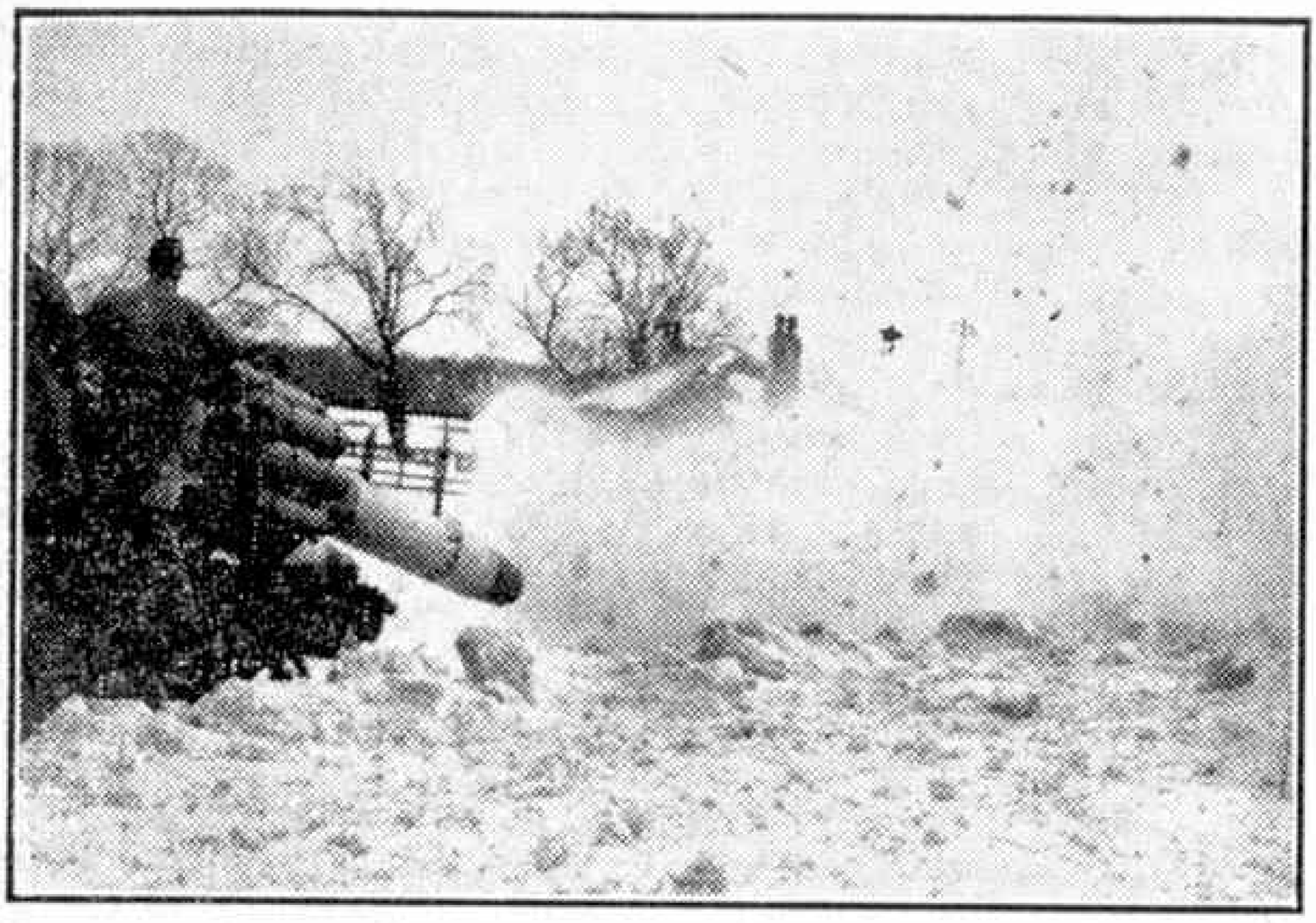
Highly scientific devices are used in collecting information on which to base weather forecasts. Here a balloon carrying radio equipment is being released. Illustrations by courtesy of Imcos Ltd.

This forecast, however, which gave an accurate general picture of the average weather last winter for the British Isles, had to be interpreted according to where one lived. Obviously it would be colder in Scotland and the north of England than it would be farther south.

Many considerations go to seasonal forecasting of this kind. For instance, it is not widely realised that our north-east coastal regions are the coldest of all in winter, while in the north-west, because of the influence of the comparatively warm Atlantic Ocean, it is not so cold. All our western seaboard in fact benefits in winter from the warmth of the Atlantic, and that is why the warmest regions in that season are those that are farthest south and also nearest to the Atlantic Ocean, that is to say Cornwall, Devon, Somerset, and parts of South Wales. There the average day temperatures in January vary between 47 and 49 deg. F. On the east coast the temperatures are several degrees lower, and at night the difference becomes greater still.

But there are other factors that stamp their influence over the general weather pattern besides latitude and longitude and the distance from warm oceans. Altitude has a most pronounced effect on the weather. So if you live in the Lake District, the Pennines, the Peak District, the Welsh or Scottish mountains or the more mountainous parts of Ireland, you must allow for the fact that usually the higher you are the colder the weather. Also, if you live in an exposed area well to windward of the prevailing winds, the rainfall, or snowfall, will be much heavier, and the snow will lie longer than it will on the lower ground in the valleys.

But if you are fortunate enough to live in what is generally known as a "rain shadow" area, that is one well to leeward of a mountain or hill range, you can benefit very considerably if you are allergic to wet and wind. By the time the wind reaches you it will have lost much of its moisture on the high ground, and will also be less strong, having encountered friction on its travel inland. And here you will enjoy yet another advantage, for as you live presumably



Clearing snow from the line at High Dyke, near Grantham, with the aid of jet motors.

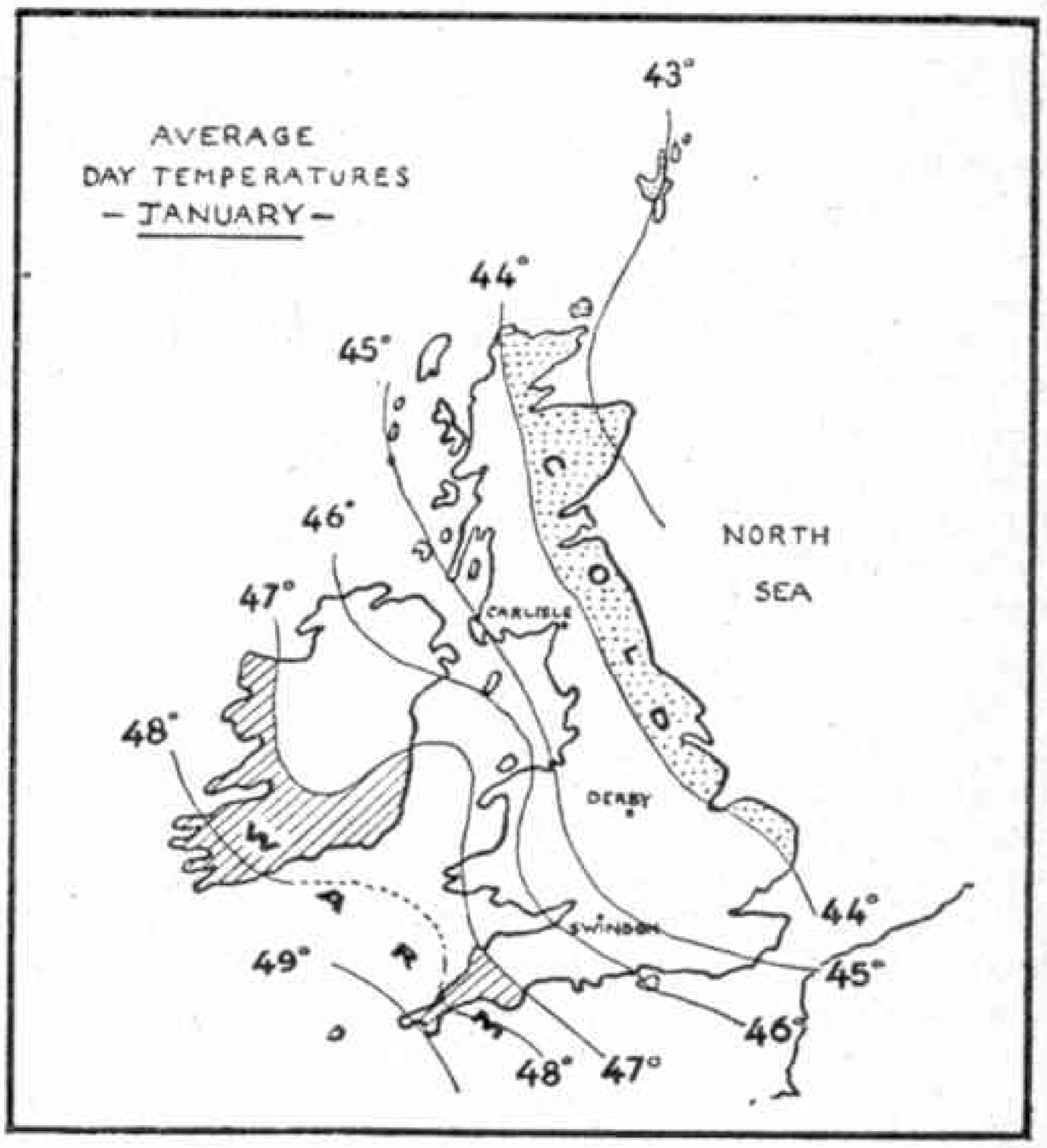
at a lower level than the hill-range that shields you, the wind, when it does reach you, drier and slowed down, will also be warmer. It will be what is called a "Föhn" wind. The reason for the extra warmth is that air becomes compressed when it descends, and the more it is compressed the warmer it becomes, as you know from the feel of a bicycle pump that has just been used.

If all these weather factors must be seriously considered when human comfort is at stake, in this case human comfort during the winter season, they must certainly be treated with equal consideration by those who plan or are engaged in winter railway, road and air services; also by constructors, engineers and farmers.

The one enemy, of course, is a "freeze-up," a term that signifies not only a long and severe spell of bitter winds from Russia and the Continent, but heavy snowfalls and drifts, followed eventually by a thaw that produces floods even more crippling than the ice and snow. Such conditions occur when the Russian "anticyclone" is unusually strong and extends southwestwards over Britain for week after week, as it did in the terrible winter of 1946–7.

Our illustrations show what the railways have to cope with under these conditions. The upper one on this page shows a new scheme for clearing snow that was first tried during the blizzard of four years ago. The standard method of clearing the track is by using the snow plough where practicable, but hand shovelling is also very important and is unlikely to be completely replaced. For example, a sudden heavy snowfall overnight may make it quite impossible to take locomotives and clearing equipment to the area where needed. The new method made use of gas-turbine motors having a thrust capable of driving a Meteor aircraft at 450 m.p.h. But the jet engine has not replaced the conventional snow plough, largely because the warm air of the jet melts the snow over the track, and then it is all too likely that it will quickly freeze again.

Frost at any time is a major difficulty for a railway, as any water frozen to the points is liable to hinder their operation. True, there are methods of overcoming this, but the most efficient anti-freeze remedy cannot be relied upon if the severity of the weather gets the upper hand. And once any major section of a railway system is put out of action by



The warm Atlantic current keeps temperatures in the west and south west of the British Isles higher than those on the eastern side.

such weather conditions, it becomes impossible to regulate efficiently the rolling stock, goods and passenger services of the other sections.

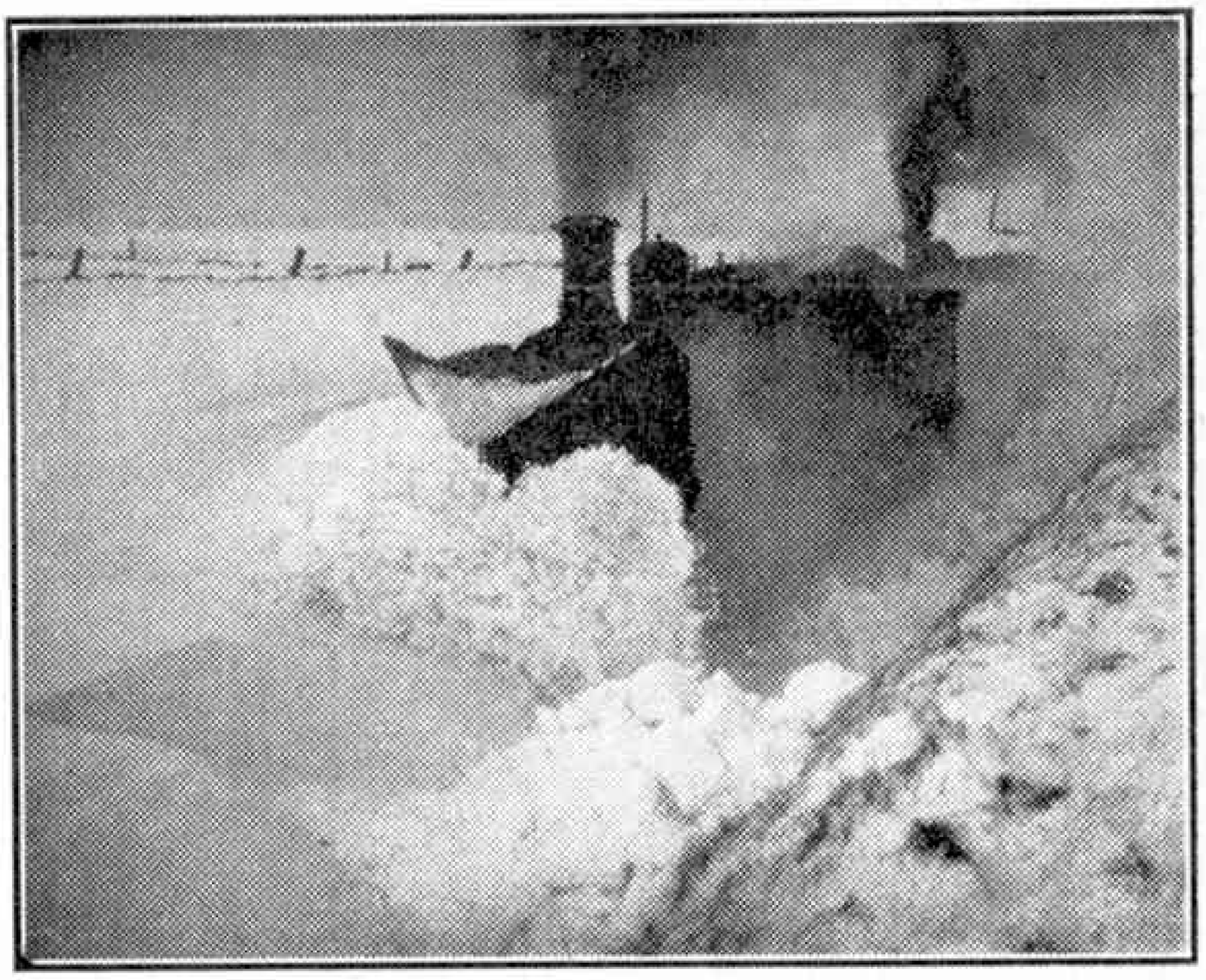
In these conditions of frost and ice the railway accident rate, like that for roads, is considerably increased, but for most people the problem does not appear to be a matter of life and death. For those who travel by air when serious icing conditions prevail, however, the weather is certainly of this importance. The heaviest and most dangerous icing is experienced in thick storm cloud, and this must be avoided at all costs by flying above it, or below or round it if the aircraft is not equipped for high altitudes. High ground must be avoided in bad weather, as many crashes occur through aircraft flying into cloud or fog-concealed hill and mountain sides. Few hazards in fact could be more perilous than this, as was shown when two aircraft were lost with all passengers and crew in the Alps last November.

Some airline routes of course cannot reasonably avoid mountainous country, and this is one of the most difficult and persistent problems for briefing authorities and aircrew alike. Perhaps the best solution is for companies to use on such routes only those aircraft that can fly at great heights, say at 20,000 or 25,000 ft. There the aircraft would be above the level at which the worst weather occurs, and above all but the highest cloud. Assuming there is stormy weather beneath, and thick cloud with dangerous icing conditions, there is still the difficulty of climbing and descending, and again there is the further hazard of cloud-hidden high ground if the airport lies in or near a mountainous region.

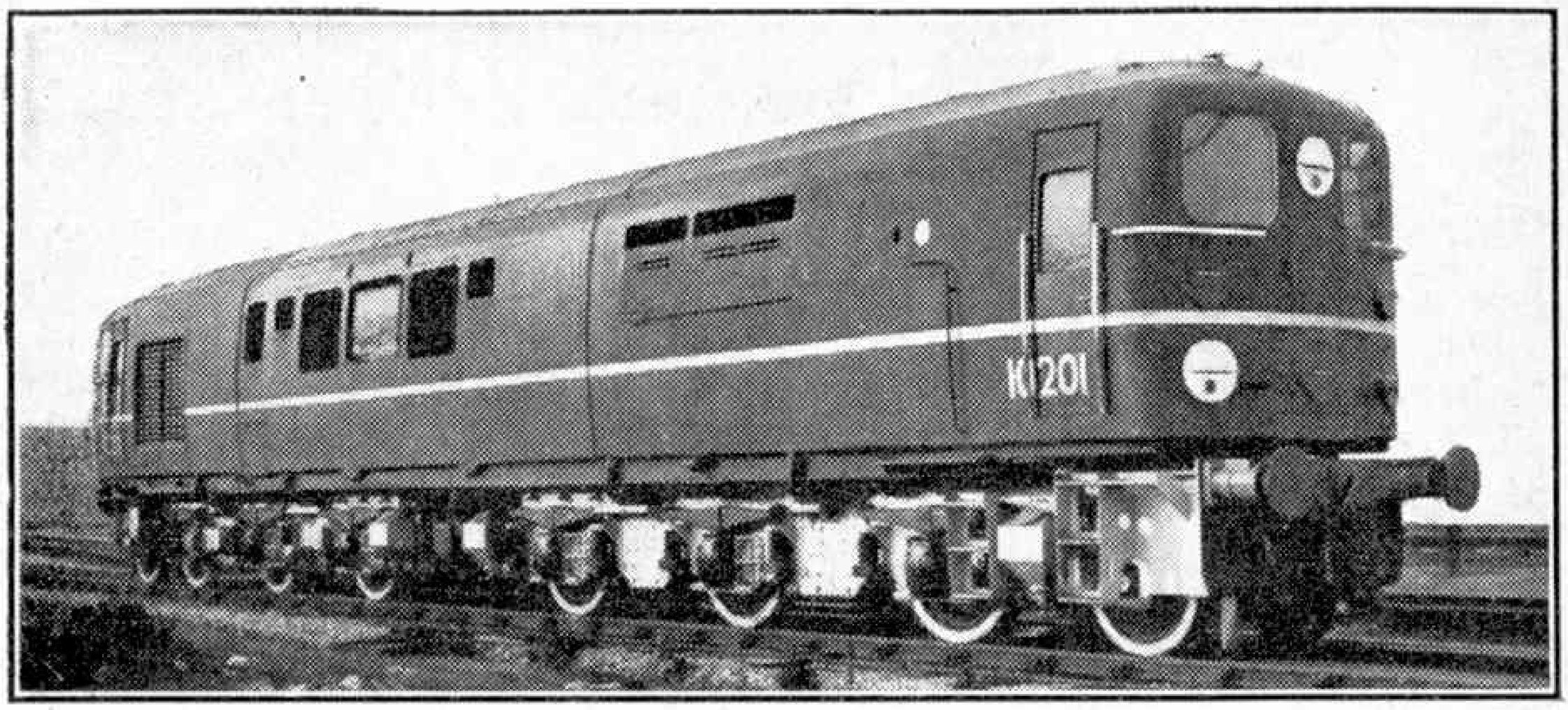
For a totally different reason mountains are again figuring in European weather news. Glaciers in the Alps, as well as in Greenland and other southern Arctic regions, are receding, which is one sign that the winters of the Northern Hemisphere between Eastern America and Scandinavia are becoming warmer. This of course is only the general tendency in a process that started as long ago as 1850, and individual years are always likely to bring below-average temperatures. Nevertheless the years between 1650 and 1850 had winters that were on the average very much colder, so much so that the period was known as "The Little Ice Age." Whether the present trend of generally warmer winters will continue as part of another 200-year cycle, or an even longer cycle, remains to be seen.

Meanwhile weather cycles are not of very great value in forecasting, as they only indicate tendencies. Like the Buchan spells, which apply only to Scotland, they often refer to a very small area, and according to the elements or combinations of elements selected by the investigator so will the cycles vary. Among those known at present are the sunspot cycle, the cycle of heat received from the sun on earth, the cycle of barometric pressures, and the Brückner weather cycle. The Brückner cycle is for European weather and shows a rhythm indicating a general change of weather about every 35 years. This was discovered in 1891, since which time numerous other researches have pointed to weather cycles over the same area of about twenty-two years in length. Investigations will doubtless continue; new cycles and rhythms will be discovered, and maybe it will be shown how a small individual cycle for one element can confirm previous research if it fits into a larger, more general and already known cycle.

But it is safe to predict that a quick "hotting up" of the British climate will not be anticipated, and this will remain temperate for many years to come.



How bad weather affects our railways. A snow plough at work near New Machar, Aberdeenshire.



Southern Diesel Express Locomotives

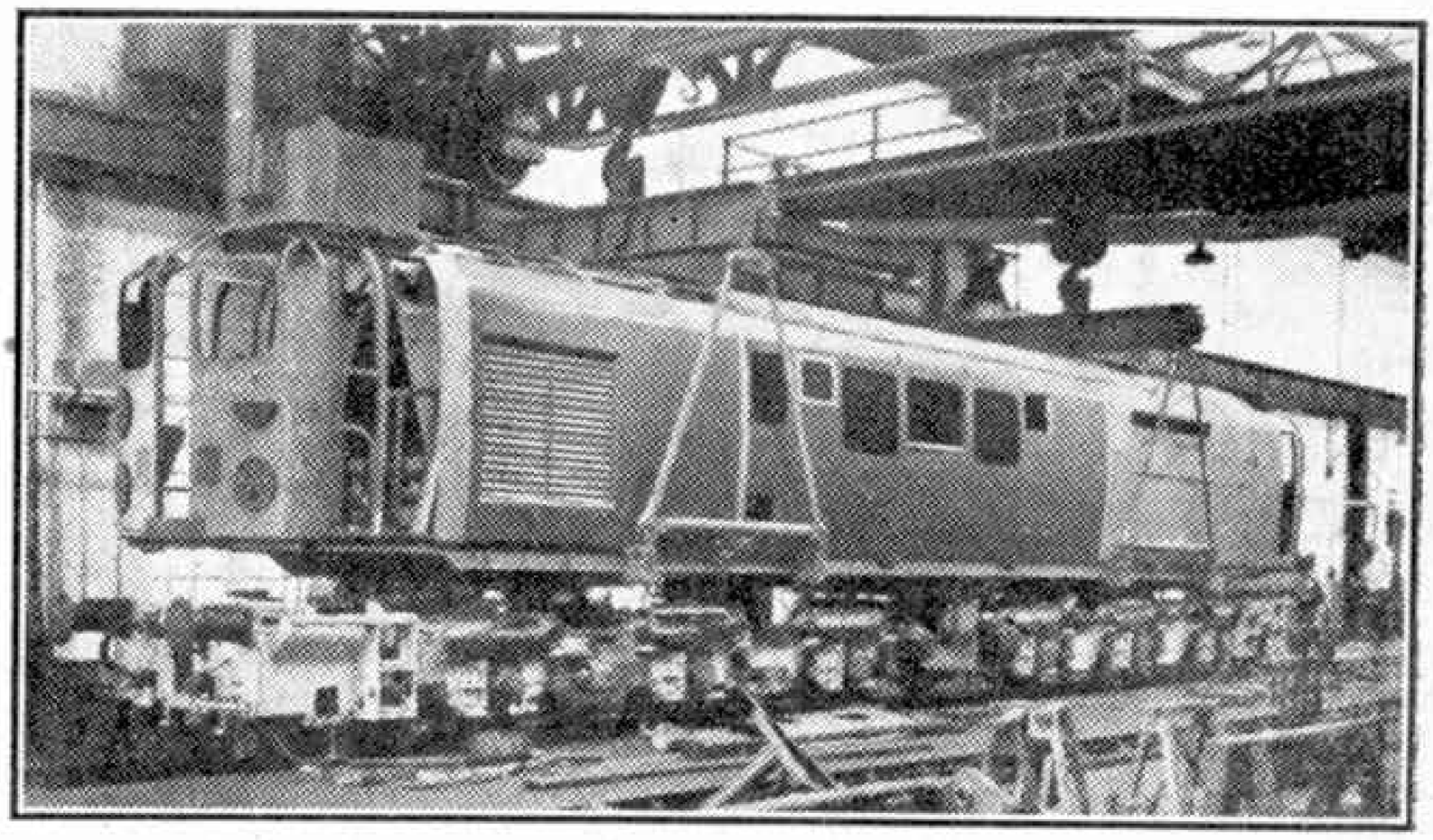
DIESEL electric locomotive B.R. No. 10201, recently completed by the Southern Region at Ashford, is the first of three similar engines originally projected in 1946 by the former Southern Railway. Unlike the London Midland diesel "twins" Nos. 10000 and 10001 that were introduced subsequently for mixed traffic working, these Southern engines have been designed for express passenger duties.

In both designs the power equipment has been supplied by the English Electric Company and is the same in the main items. The Southern design incorporates two power bogies each with three driving axles like the L.M.S. engines, but there is in addition a pair of pony truck wheels at the outer end of each bogie.

The Vee-type diesel engine with its 16 cylinders in two banks of eight is direct-coupled to the main generator. Power from the generator is transmitted to the driving wheels by means of six traction motors, one to each driving axle. The engine is started by using the main generator as a motor on current supplied from batteries; the electrical circuit cannot be completed until pressure has been built up in the engine lubricating system.

Control gear, batteries and water tanks are housed in a compartment to which filtered air only is supplied. The engine cooling system includes twin radiators, one on each side of the locomotive; the position of these is indicated externally by the large grilled openings in the body sides. A washbasin and cooker are included in the facilities for the crew, and an oil-fired boiler, automatically controlled, supplies the steam required for the heating of the train.

In the cab at each end there is a driver's control desk, seats for the enginemen and a cupboard for their equipment. Central double doors at each end give access to a similar locomotive, if two are coupled.

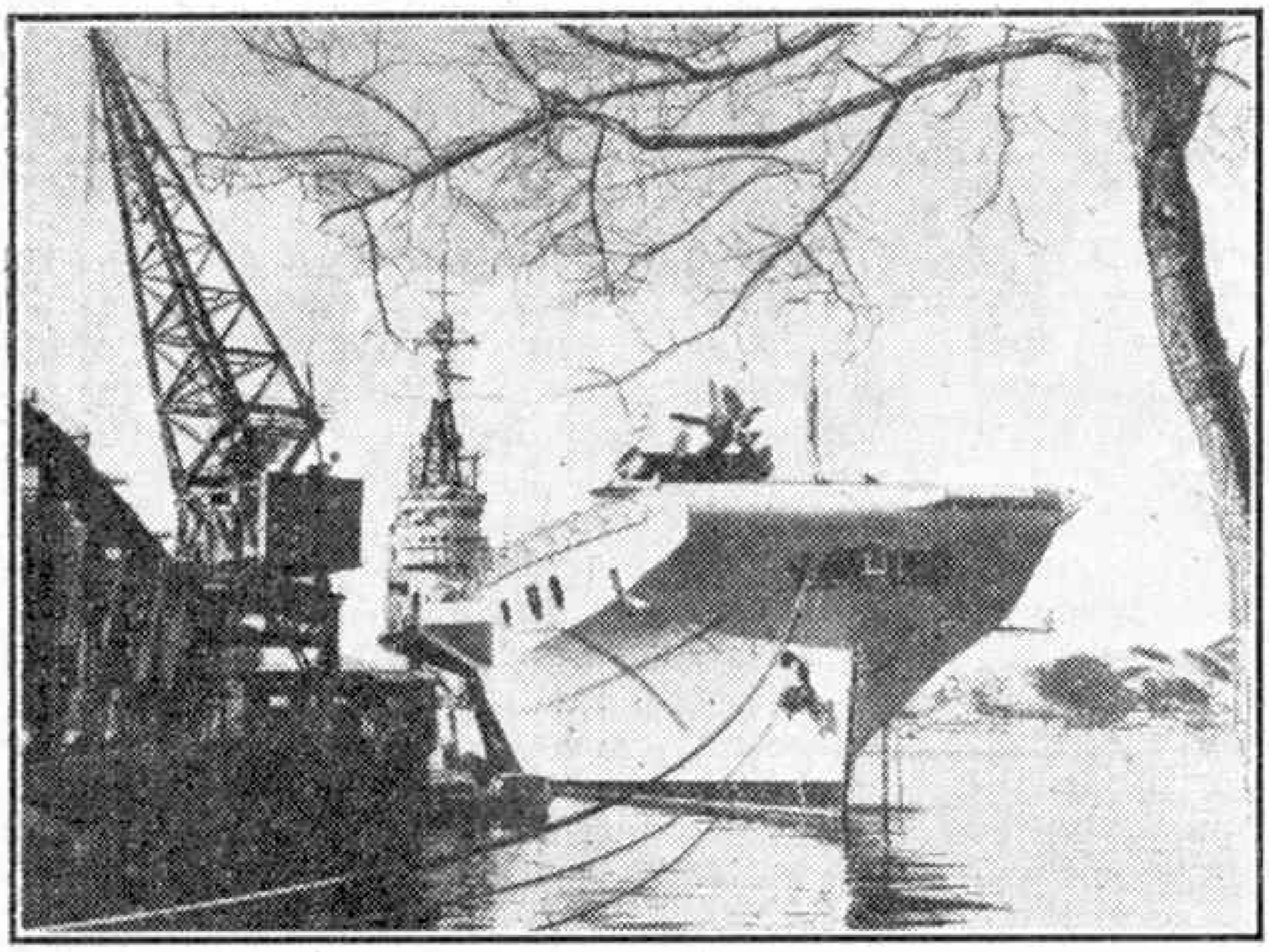


The B.R. Official Photographs on this page show the Southern diesel electric locomotive recently put into service. The lower picture shows the body being lowered on to the bogies by means of special lifting gear.

Britain's New Sea Power

By John W. R. Taylor

THE war in Korea has killed once and for all the myth that aircraft carriers and flying boats are obsolete, too vulnerable weapons in this atomic age. The only British aircraft that could be rushed to Korea in time to help counter the first Communist offensive were "Firefly" and "Seafire" fighters of the 13th Carrier Air Group, based on H.M.S. "*Triumph*." The only patrol bombers that could be switched quickly to Korean waters to deal with the potential menace of enemy submarines, and the real danger of enemy mine-laying junks, were "Sunderland" flying boats of R.A.F. Coastal Command. "*Triumph's*" fighters have since been relieved by other "Fireflies" and "Sea Furies" of No. 17 C.A.G., aboard H.M.S. "*Theseus*," but the "Sunderlands" are still there, and after eight months of fighting all British air units in action are still either carrier-based or water-based.



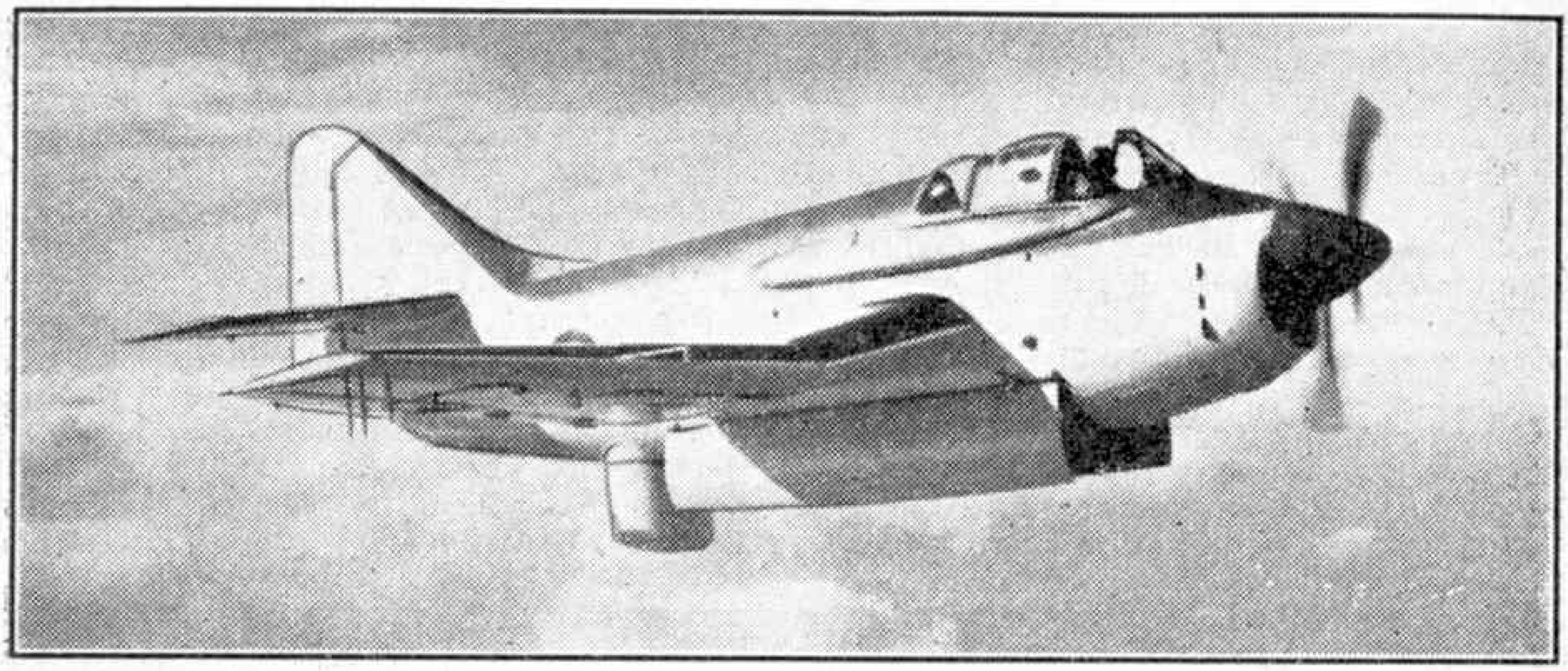
The light fleet carrier H.M.S. "Theseus" alongside a quay in a Japanese harbour. British Official Photograph.

This fact must come as a great surprise and shock to the people who, for many years, have been telling us to put all our eggs into the big bomber basket. All we had to do in the event of war, they claimed, was to sit at home, send out a few bombers to atomise most of the enemy and wait for the remainder to surrender. Unfortunately, a thinly mechanised army like that of the Communists in Korea is a poor target for atom bombs. The only way to stop such a force is with another army, backed up by fast, hard-hitting tactical fighters and bombers. But fighters and bombers, big or small, need bases, and there were simply not enough bases in Korea.

Such a state of affairs should not have caught us napping, because the remedy is as old as war itself. The American General Nathan Forrest knew it many years ago when he said that the way to win wars was to "Git thar fustest with the mostest." Nowadays we sum it up in the single word "mobility." Lack of mobility in the air cost us the Battle of Norway in 1940 and could well cost us Hong Kong, Singapore or even Britain itself in any future war.

Yet the Royal Air Force shows little interest in the highly mobile 512 m.p.h. Saunders Roe SR/A.1 jet-fighter flying boat, for which nature has provided unlimited runways all over the world, and has not even ordered a flying boat replacement for its veteran "Sunderland" anti-submarine patrol bombers. Instead, Coastal Command is being re-equipped with land-based bombers, which need miles of runway from which to fly. The entire R.A.F. will, therefore, soon be chained to the concrete of its own aerodromes, thinly scattered throughout the Empire, and the priceless asset of mobility will be a monopoly of the Royal Navy's Carrier Air Groups.

Korea has proved that the Royal Navy knows how to use that advantage to the full. Despite the fact that "*Triumph's*" Fairey "Firefly" Mk. I reconnaissance-fighters and Supermarine "Seafires" were obsolescent machines dating from World War II, their pilots more than maintained the great tradition of Britain's Senior Service. They covered important Allied landings, made innumerable photo-reconnaissance flights and blasted the



Fairey 17 anti-submarine aircraft, designed for the Royal Navy. It is shown here with its radar "dustbin" lowered and its bomb-bay open. Photograph by courtesy of The Fairey Aviation Co. Ltd.

enemy with 50,000 rounds of cannon fire and 1,475 rockets before being relieved by their colleagues on H.M.S. *"Theseus."*

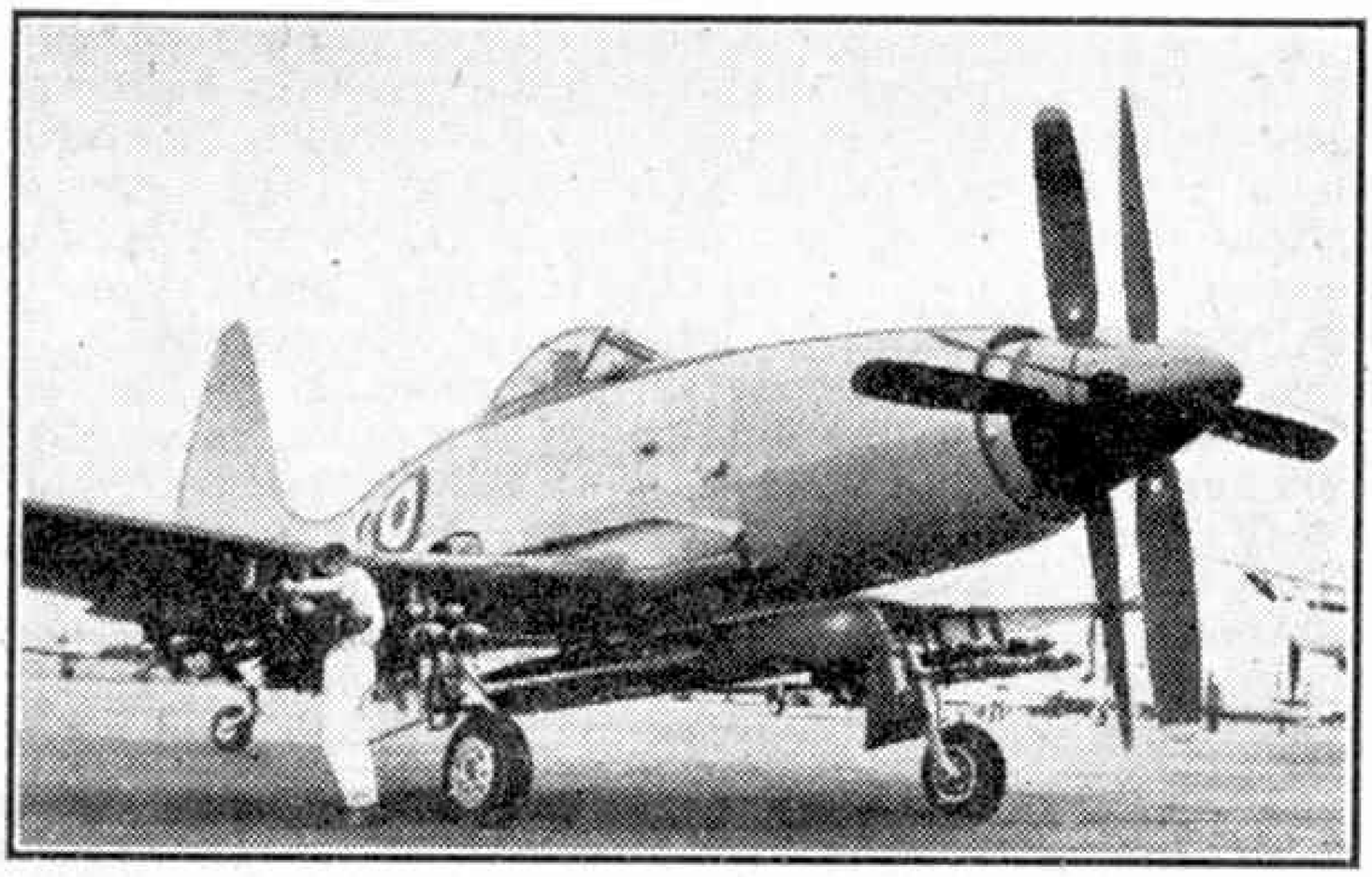
The story of *"Theseus's"* exploits is one of the epics of the Korean War. Day after day, often in the most appalling weather, her "Firefly" AS.6s and "Sea Furies" took off to support hard-pressed United Nations ground forces, sometimes flying 60 sorties a day. In a single operation they destroyed 130 buildings occupied by enemy troops, 13 oil dumps, five warehouses, 26 junks, three power stations, 12 front-line villages, lorries, rolling stock, gun emplacements, railway tunnels and about 1,000 enemy troops.

Flight deck personnel achieved near miracles to keep the fighters airborne. Refuelling and re-arming often had to be done in snowstorms; RATOG rockets had to be fitted to lift the heavily-laden aircraft from the deck, and the deck itself had to be chipped clear of ice and snow in readiness for the returning fighters. Altogether, flight deck personnel loaded some 150,000 rounds of ammunition, 2,123 rockets and 304 bombs in the first four months. Yet, despite all this work, no aircraft remained unserviceable for more than two hours.

In recognition of this splendid record of achievement by its air and deck personnel, the 17th Carrier Air Group was awarded the coveted Boyd Trophy, given annually for the finest feat of aviation by an individual or unit in the Royal Navy. Never before had the Trophy—a silver model of a "Swordfish" torpedo-bomber—been awarded to a complete Group, and never before had it been more well-deserved.

Fortunately, conditions in Korea have been such that the Royal Navy has been able to gain invaluable operational experience with few casualties. The lessons learned will help to make Carrier Air Groups of the future even more efficient and formidable.

At the present time, the Royal Navy has three large fleet carriers operational and three in reserve; four operational light fleet carriers and two in reserve. Its principal strike aircraft is the Fairey "Barracuda" 3. Single-seat fighters include the Hawker "Sea Fury" 10 and 11, "Seafire" 47 and



Westland "Wyvern," the Royal Navy's new propjet-powered strike fighter. In this picture it is armed with a heavy torpedo and 16 rockets.

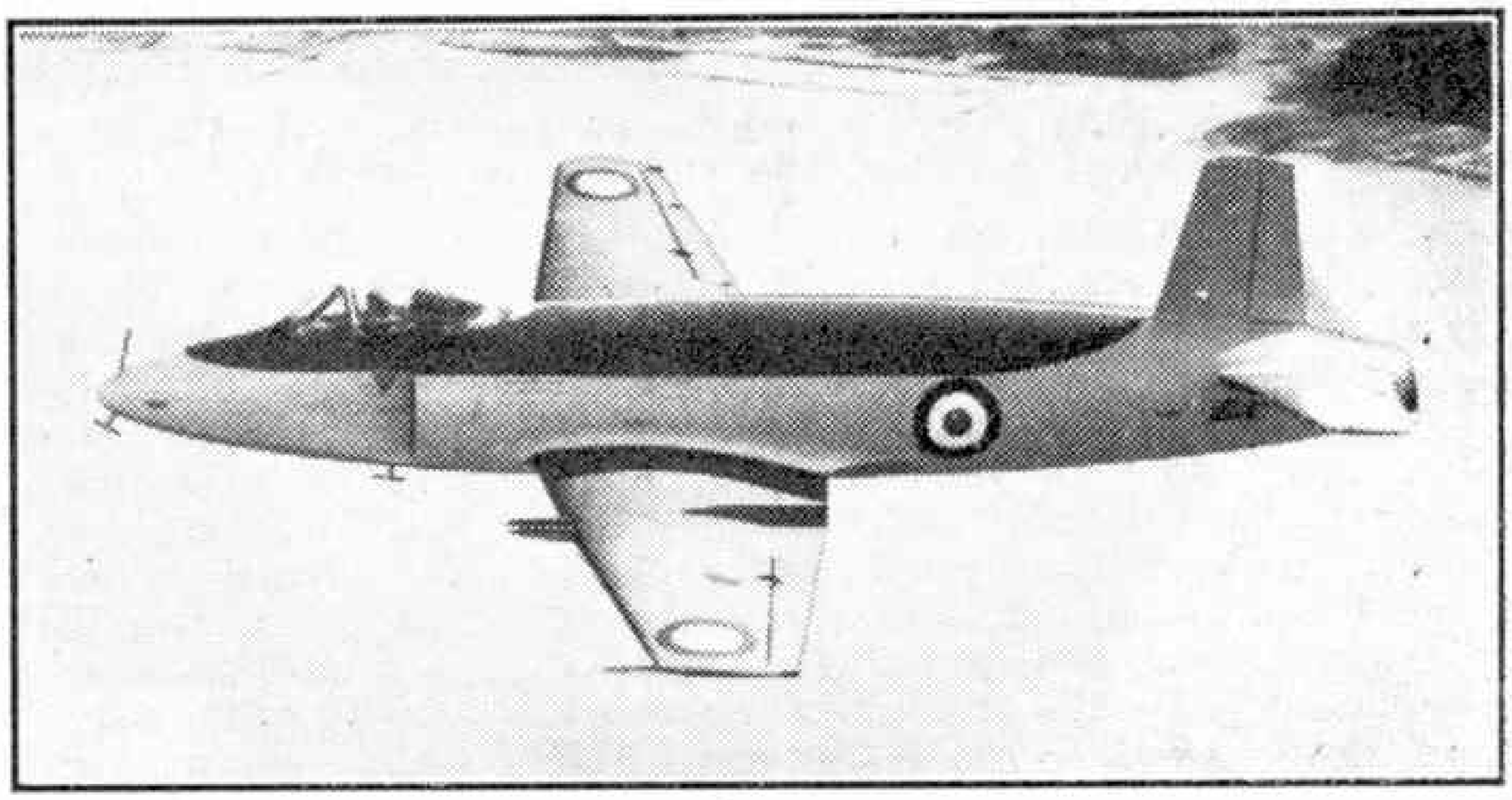
de Havilland "Sea Hornet" 20; two-seaters are "Sea Hornet" 21 night fighters and "Firefly" 4 and 5 reconnaissance-fighters. The new "Firefly" 6 carries no guns and is intended for anti-submarine duties, using radar and sono-buoys to find the submarines, and rockets, mines, depth charges and bombs to destroy them. In Korea, however, in the fortunate absence of enemy underwater weapons, "Firefly" 6s have been used mainly to attack surface vessels and shore targets.

It may seem surprising at first that not one of the above aircraft is a jet, especially as the first jet 'plane ever to land on and take-off from a carrier was a British "Sea Vampire," on 3rd December 1945. But there is a good reason for this. Experience showed that there were still many problems to be solved before jets could become fully operational, and so the Navy decided to use its "Sea Vampires" as guinea pigs and wait for newer, faster naval jet fighters, with better take-off performance, before replacing its well proven piston-engined machines. The wisdom of this decision has been proved in Korea, where piston-engined fighters have often been more useful than jets because their lower fuel consumption allowed them to spend longer periods over the target.

But the inevitable change-over to jet power is already in full swing, and the Admiralty has ordered hundreds of fast, powerful jet fighters and bombers to put aboard its present carriers and the six new ones that will come into service in the next four years. The new carriers will be the last word in sea-fighting efficiency and power and so will their aircraft, for the day has gone when naval fighters were slower and less formidable than their land-based counterparts. In fact, the Supermarine "Attacker" and Hawker "Seahawk" single-seat jet fighters, which the Navy is to put into service this year, would almost certainly outfly and outfight many of their R.A.F. opposite numbers, despite the addition of arrester hooks, catapult equipment and folding wings for stowage aboard ship. Both the "Attacker" and "Seahawk" are powered by a single Rolls-Royce "Nene" and armed with four 20 mm. guns. The Supermarine fighter can fly at 590 m.p.h.; the Hawker is even faster.

To protect the fleet at night, Naval Aviation will use de Havilland "Venom" NF.2 two-seat night fighters, which are among the fastest, most manœuvrable jets in the world.

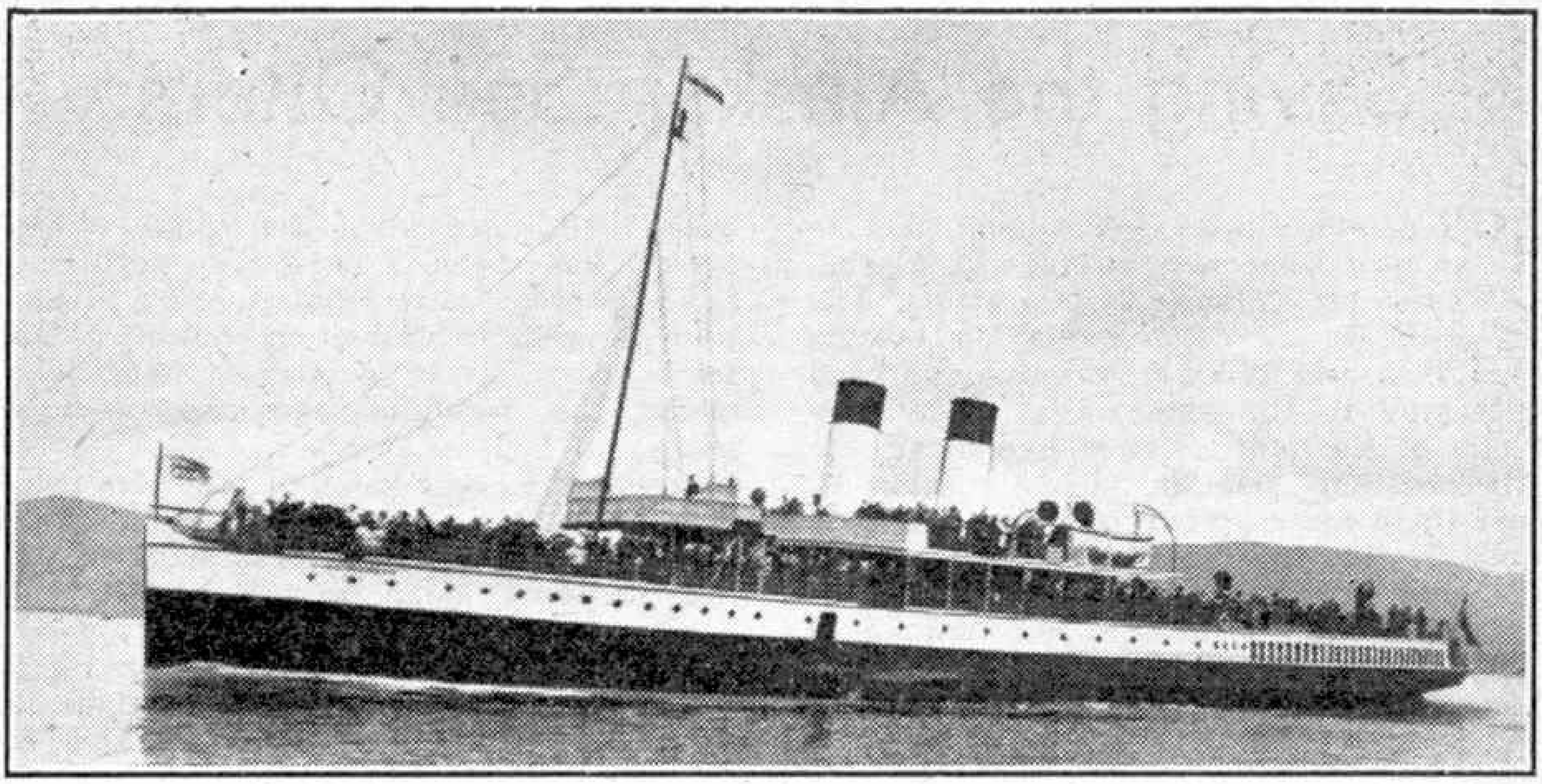
Also due to enter service this year is the Westland "Wyvern" TF.2 strike fighter, which has a 4,110 h.p. Armstrong Siddeley "Python" propjet. Those lucky enough to see this aircraft perform at last year's S.B.A.C. Display, carrying a large torpedo and 16 rockets, were left in little doubt of its great speed and offensive power.



"Attacker" jet fighter, a type that soon will be entering squadron service with the Royal Navy. Photograph by courtesy of Vickers-Armstrongs Ltd.

Now, to complete its "new look" air power, the Navy has ordered the Fairey 17 to re-equip its vitally-important anti-submarine squadrons. No other aircraft flying can match the 17 for such duties, for, despite its relatively small size, it carries a large radar scanner and can accommodate a formidable array of bombs, sono-buoys, torpedoes, mines and other weapons in its huge bomb-bay, as well as rockets under its wings. A feature not at first apparent is that it is twin-engined. It is powered by an Armstrong Siddeley "Double Mamba," which consists of two single "Mamba" propjets mounted side-by-side and driving a single set of contra-props. The beauty of this arrangement is that the Fairey 17 can use

(*Continued on page 238*)



A Pioneer Turbine Steamer

"King Edward" Celebrates her Jubilee

By J. S. Buchanan

HALF a century ago, in May 1901, a steamer was launched from the shipyards of Wm. Denny and Bros. at Dumbarton that has become probably the most famous ship to ply on the Clyde, as well as the veteran of the present British Railways Clyde Fleet. This was the *"King Edward,"* shown in the illustration on this page as she was in her earlier days. She was the first commercial ship to be propelled by turbine machinery. The pioneer vessel with this new method of propulsion was the yacht *"Turbinia,"* which attained the remarkable speed of 34 knots. No attempt was made to reach this speed with the *"King Edward,"* but she registered 20.483 knots on trial. This placed her ahead of any paddle steamer of her time.

The machinery was supplied by the Parsons Marine Steam Turbine Co. Ltd. of Newcastle, and consists of three direct acting steam turbines driving three screws fitted into a hull of length 250 ft. 6 in. and 30 ft. in beam. As built, and until 1905, the vessel had five propellers, two on each wing shaft, but the two inner ones were removed when experience proved that the extra propellers added nothing to her efficiency.

"King Edward" was an immediate success on the Fairlie-Campbeltown run and later her travels took her as far as Inveraray. No doubt it was the success of this pioneer that resulted in a succession of fast turbine ships for cross-channel and transatlantic services.

In February 1915 *"King Edward"* entered Admiralty service as a troop ship far from home waters. Visits were paid to the Channel ports of Havre, Rouen, Cherbourg, Dieppe, Dover, Southampton, Folkestone and Calais, and as an ambulance transport she went as far afield as the White Sea.

After reconditioning *"King Edward"* took up her original runs to Campbeltown and Inveraray, but this time from Greenock and Gourock. Then in 1927 ownership was transferred to Williamson-Buchanan Steamers Ltd., and she was assigned to the 10 o'clock run from Glasgow to Rothesay, with a cruise to the Arran coast in addition. This run was taken over by the new *"Queen Mary II"* in 1933, and the *"King Edward's"* sailing time was put back to 11 o'clock, from Glasgow to the Kyles of Bute.

During the last war the *"King Edward"* served as a tender on the Clyde, her home waters. Shortly before the war the vessel was acquired by the Caledonian Steam Packet Company Limited, which operated in conjunction with the L.M.S., and the familiar white funnel with black top gave way to cream and black, to become buff and black when she was taken over by British Railways, her present owners.

Saving the Alaskan Sea Otters

By M. Lorant

THE United States Government plan to sponsor some new colonies in Alaska, but these are colonies of sea otters. The 40 years of sea otter protection by the U.S. Fish and Wildlife Service have been successful to the extent that more than 8,000 of the animals now live along the Alaskan and Aleutian Island coasts. In fact there are so many of them that it is now feasible to transplant small colonies of them to other areas, where sea otters have not been seen since the scourge of Russian and American fur traders wiped them out by the late 1860s. Fish and Wildlife Service refuge workers plan to capture small numbers of sea otters at such places as Amchitka Island in the Aleutians, where the largest number of otters occur, and to start new colonies along the islands and coast of Alaska.

An "old man of the sea." This adult sea otter is on the rocks of Amchitka Island, in the Aleutian Islands.

Sea otters were once abundant along the Pacific coast from southern California to northern Alaska, and they were the targets of intense hunting during the Russian occupation of Alaska. In 1867, when the United States acquired Alaska, these valuable fur-bearing animals had been reduced to the point of commercial extinction. After the purchase, the killing of the few remaining sea otters, hidden in little pockets along the coast, was greatly curtailed by regulations prescribed by the United States Secretary of the Treasury. These regulations continued until 1910, since when the killing of sea otters has been completely outlawed. Some people feared that the sea otters were doomed to extinction, but in a few small places little groups of them lived under the watchful eyes and jealous secrecy of Federal agencies.

It was the great value of sea otter pelts that caused the secrecy, and the efforts to provide protection for the animals. When the Russians came to Alaska for the express purpose of getting many shiploads of sea otter pelts, a silky black pelt was worth its weight in gold. Some skins are said to have been sold for up to £1,000. The average was much less, but at any rate the otter pelt was worth enough to cause piracy and mass murder of whole tribes of native Aleuts. The early traders from Asia enslaved many of these natives, working them to death or killing them before sailing away. Later American and English traders also engaged in sea otter raids and high-handed piracy. With this background of profitable and adventurous exploitation, it is no wonder that the mere mention of sea otters still creates an uncommon interest.

About all that the U.S. Federal agencies charged with protection of the sea otters could do for the animals during the early part of the century was to maintain secrecy about the location of small groups in isolated parts of the coast, since the agencies concerned did not have the necessary funds for much patrolling of the areas. During the 1930s the U.S. Navy and Coast Guard gathered evidence that Japanese "fishing" craft might be netting sea otters illegally in Alaskan waters. From these reports the American Congress became aware of the need for more adequate protection. This eventually enabled Federal agencies to station personnel and patrol boats in the Aleutians and elsewhere in Alaska.

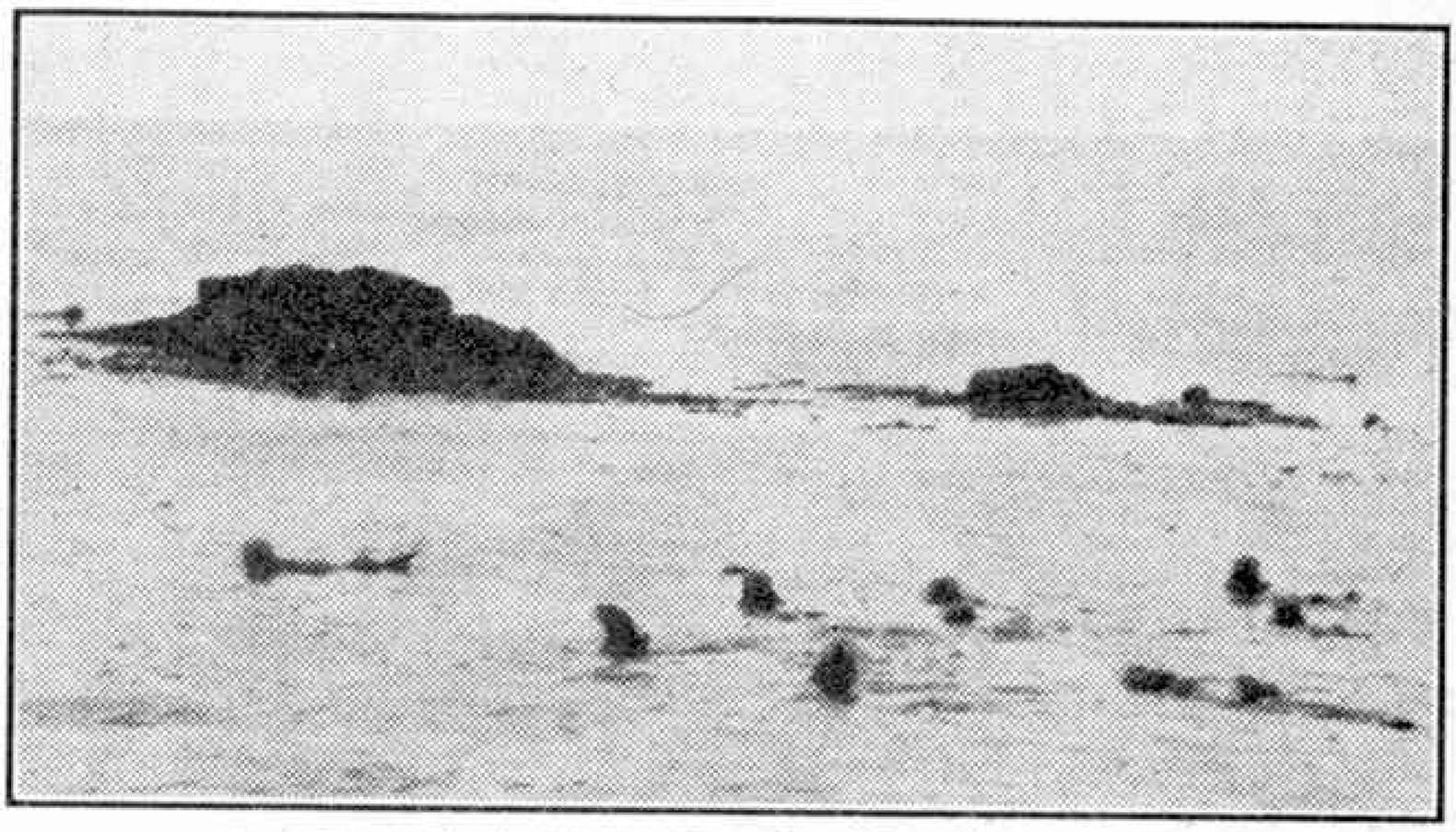
It was the sighting of a Japanese vessel, apparently netting sea otters in an inlet of Amchitka Island, that started the present management programme. There in the inlet was a large sea-going ship

where, according to Navy charts, no ship could possibly be afloat. The charts stated that the inlet was filled with rocky reefs, and any ship venturing into it would surely be destroyed. On sighting the Navy vessel, however, the Japanese ship put on steam and sailed away, right over the "rocks." Investigation soon showed that the "rocks" were really rip tides that created an illusion of reefs.

In the inlet thus inspected was found a large group of rare sea otters. Hidden away from hunters and pirates, the otters had lived and multiplied for many years. The U.S. Bureau of Fisheries received a small appropriation from Congress for the establishment of a sea otter station on Amchitka. This protection was materially assisted by the Navy and Coast Guard's alert watch on prowling Japanese fishing craft.

When the U.S. Bureau of Fisheries and the Biological Survey were consolidated in 1940 to become the U.S. Fish and Wildlife Service of the Department of the Interior, the sea otter management programme was given impetus.

During the war years the sea otters began to multiply in their relative security. Now there are about 4,000 of them on Amchitka, and about the same number scattered in small groups along other islands and coastal areas. This increase came in spite of the fact that many soldiers stationed in the Aleutians took a fancy to "potting" sea otters. Some of the men tried to take home sea otter souvenirs, still worth several hundred dollars each in some of the world's markets, but U.S. Fish and Wildlife game management agents "discouraged" the practice. Even to possess a sea otter skin makes a person subject to prosecution.



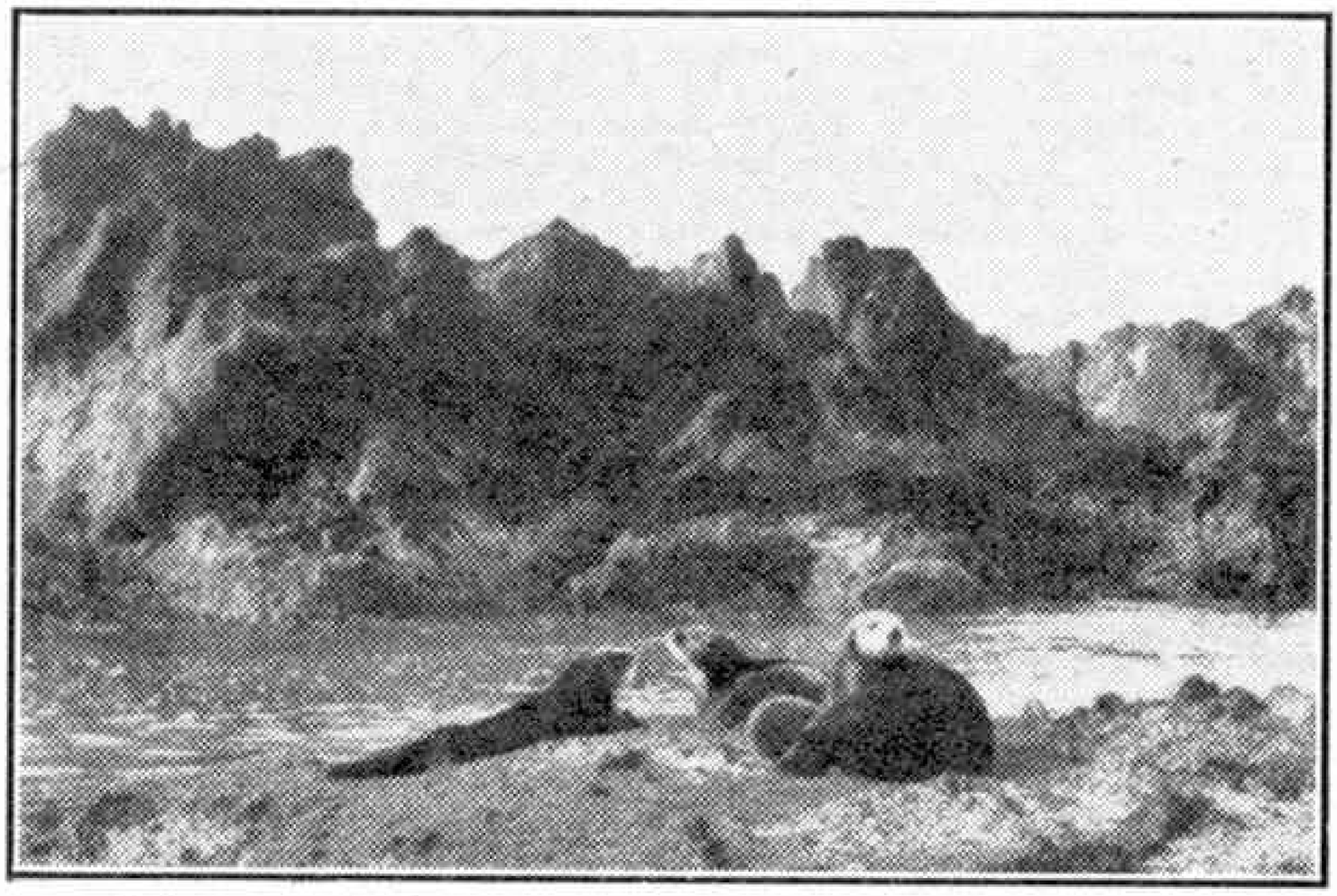
A pod or shoal of sea otters in their native haunts.

Finally, the killing of sea otters by soldiers and the smuggling of pelts to Europe by pilots was stopped with the U.S. Army's co-operation. Now an American Army biologist on Amchitka has been working for some time with the Fish and Wildlife Service in studying sea otters. In addition to this help, the Army has loaned jeeps and other equipment to refuge personnel and has otherwise been of assistance.

As in all cases of game management, a complete study of the animal's life history is needed before intelligent efforts can be made to apply management practices. Sea otters cannot live except along certain shorelines. They need an area where the water is comparatively shallow, as off shelving beaches. In such areas live the sea urchins on which the otters mainly feed. There must also be beds in which the otters can rest, play and hide from killer whales.

Killer whales and man

(*Continued on page 238*)



This group of sea otters on Amchitka Island includes a pup.

Railway Notes

By R. A. H. Weight

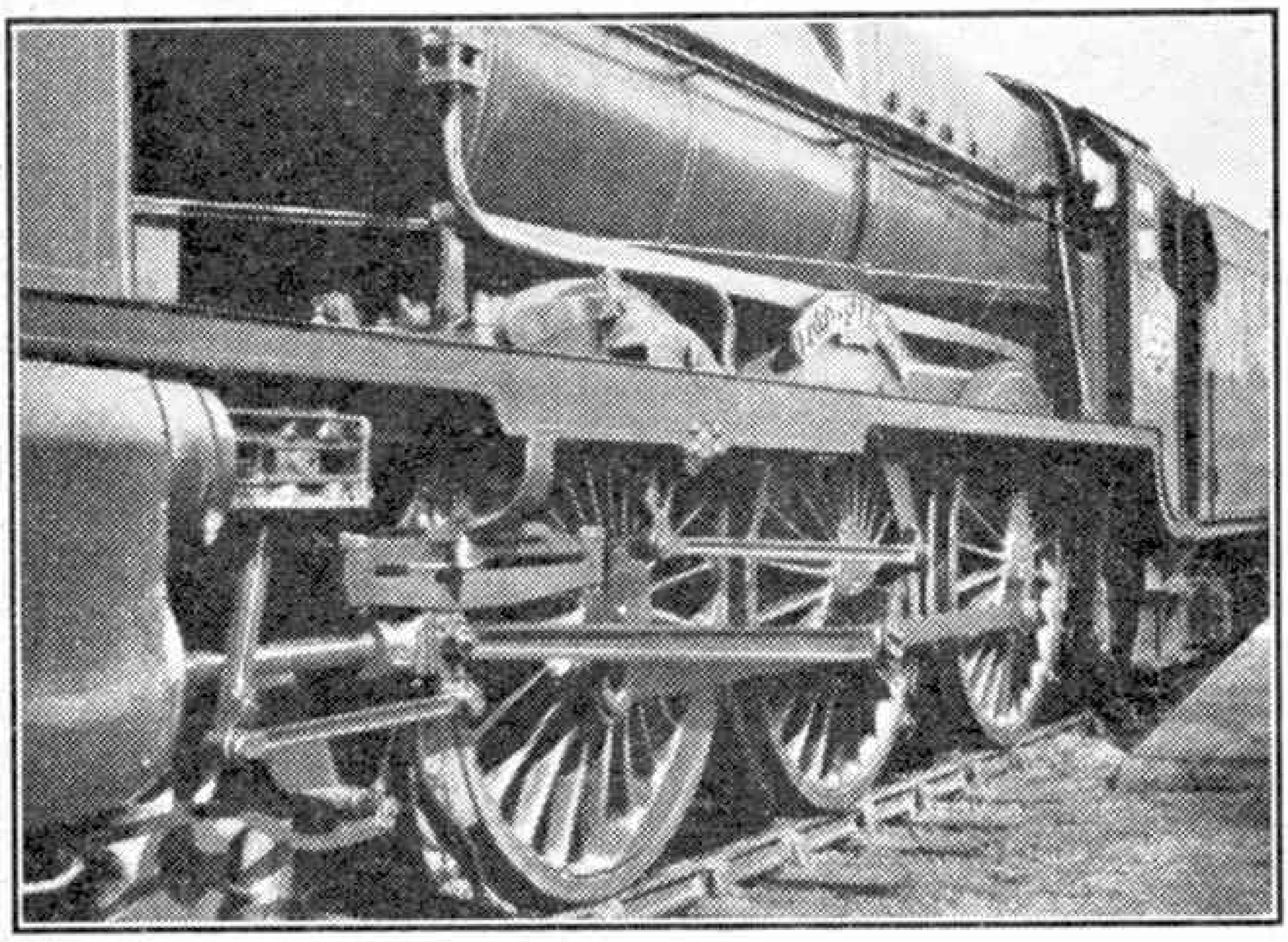
Preservation of Railway Relics

A most interesting report has been presented to the British Transport Commission, and accepted by that body in principle, by a Committee which has been investigating the preservation of items of historic interest in connection with transport. Representative locomotives and rolling stock, engineering models, prints, pictures, tickets, books and legal documents have all come under survey. Other items which mark notable phases of progress and development not only on the railways of Britain, but also relating to roads, inland water transport, certain docks and catering services, have been included.

The Railway Museum at York, established by the L.N.E.R. for the centenary of the Stockton and Darlington Railway in 1925, is an admirable institution in its way, but it is of limited size and is now full. Several notable engines are kept there, including the first Stirling 8-foot single G.N.R. No. 1. Other former railway companies had preserved some of their most notable locomotives of bygone days, together with smaller relics; but these are necessarily located at somewhat scattered points, not always available for public inspection.

A museum for historic exhibits of the smaller kind is in process of formation at Euston, London. There is a proposal that later on a British Transport Museum on a larger scale should be set up in or near London in a building which is in itself an important historic and architectural structure, such as the old terminus of the London and Southampton Railway at Nine Elms, built in 1838, which still stands. The company and the terminal were the predecessors of the London and South Western (now Western Division, Southern Region) and Waterloo station respectively.

Much could be done, without taking up too much space, in the way of displaying models or small-scale reproductions of notable engines, carriages, wagons and engineering works and structures, which in their day played a vital part in British railway progress and development during the last 125 years.



An interesting view of the rods and motion of "Nelson" class 4-6-0 "Lord St. Vincent," No. 856 of the former Southern Railway. Photograph by Frank Moss.

Shropshire to County Durham and Back

We have been favoured with an interesting account of recent journeys by 11 trains which started in the Western Region and traversed important cross-country and main lines of the London Midland and North Eastern Regions. In each direction short spells were enjoyed watching the traffic at the important "frontier" junction stations of Shrewsbury, Crewe, Leeds and York.

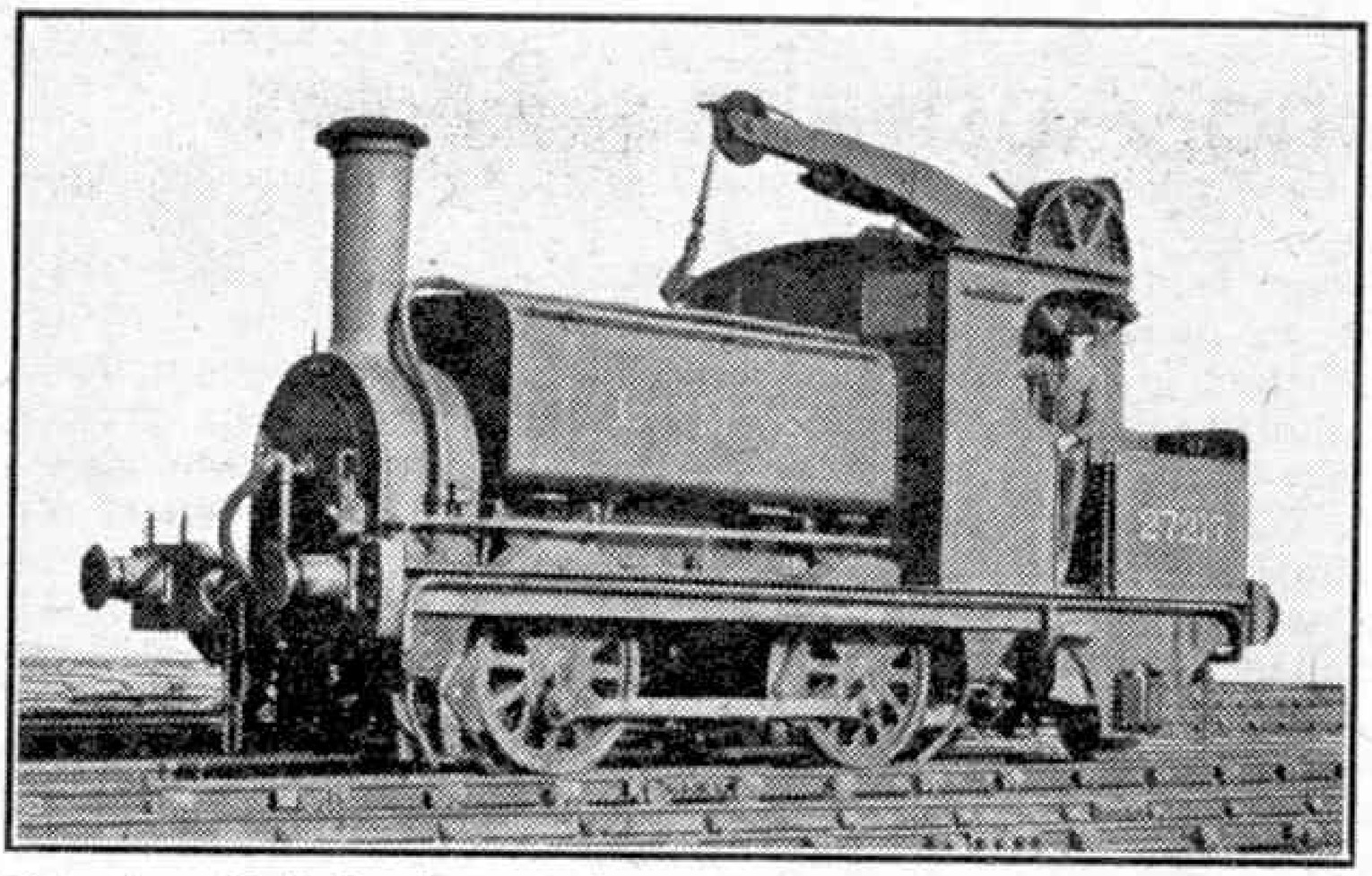
No. 45742 "*Connaught*," "6P" 4–6–0 with double chimney, provided the first motive power on a Hereford-Shrewsbury train. Class "5" 4–6–0s headed several of the trains concerned, between Shrewsbury and Stockport. From Huddersfield to Leeds the locomotive was No. 45043. From Leeds to York, now on North Eastern metals, the engine was "Hunt" class 4–4–0 No. 62762 "*The Fernie*." Several "Hunt" and "Shire" engines were noted at York, whence the journey was continued in the "*Northumbrian*" express (King's Cross to Newcastle) behind "A1" No. 60150, which kept good time. A former G.W.R. coach in brown and cream livery was included in the make-up.

The southbound "*Northumbrian*" was used on the return trip between Darlington and York. The engines were No. 60080 "*Dick Turpin*," an "A3" 4–6–2, then one of the generously named "Green Arrows," No. 60809, "*The Snapper, The East Yorkshire Regiment, The Duke of York's Own*"—which had come from Newcastle through Sunderland and Stockton. The latter took the through carriages for Manchester and Liverpool non-stop to Leeds. From Leeds over the Pennines, the L.M.R. regularly provides two engines for this train, but the combination of power is not always as vast as on the occasion in question. An Edge Hill (8A) unrebuilt "Scot" No. 46164 "*The Artists' Rifleman*" was piloted by "Jubilee" No. 45705 "*Seahorse*," of Farnley (25G). On the previous day the engines were the modified "Scot" "*Royal Fusilier*" and class "5" No. 45341.

Two "Jubilees" have often been noted on the train, just as the writer remembers journeys behind pairs of L.N.W.R. 4–6–0s in years gone by. The concluding motive power over the hilly, jointly-operated line south of Shrewsbury was a Fowler 2–6–4T. Interesting observations included: at Shrewsbury, 4–6–2 No. 46209 "*Princess Beatrice*" from Crewe handing over to the W.R. No. 7029, "*Clun Castle*." "Royal Scot" No. 46129 "*The Scottish Horse*" was on the following North-West train working through from Manchester to Pontypool Road, W.R. At Crewe or near, No. 46140 "*The King's Royal Rifle Corps*" was in a batch of engines running-in after repair. No. 46149 "*The Middlesex Regiment*" (9A) was on the "*Comet*" London-Manchester express; No. 45738 "*Samson*" on a goods and No. 46238 (12A) "*City of Chester*" on the down "*Midday Scot*."

Western Tidings

Since authority was given for "Kings" to run between Bristol and Shrewsbury via the Severn Tunnel, Pontypool Road and Hereford, in order to cope with severe gradients and heavy loads, we learn that the pioneer of the class, No. 6000, "*King George V*" (82A) has been making an evening run on occasions on through expresses such as are mentioned in the previous notes. Perhaps the new standard "Pacifics" when available for the Western



The veteran North London crane locomotive referred to in the accompanying paragraph. This British Railways Official Photograph shows the engine as L.M.S. No. 27217.

Region will operate over that route.

Construction of new 0–6–0Ts continues; Nos. 1630–7 of the light class, No. 8428 and Nos. 9434–9 of the "94xx" type, built by contract, were placed in service during January. Building of these classes continues.

"Saint" 4–6–0s withdrawn include No. 2943 "*Hampton Court*," No. 2979 "*Quentin Durward*." "Bulldog" 4–4–0 No. 3406 "*Calcutta*" has also gone. The latter had been working between Gloucester and Hereford as perhaps the last of her class in regular service. All the Dean "655" and "2721" series of 0–6–0Ts have gone. They were built round about 1897–1901, and were the most powerful pannier tanks until the advent of the now numerous "57xx" series from 1929 onward. Several tanks formerly belonging to S. Wales docks or railway companies have been scrapped. Some withdrawn ex-Barry Railway 0–6–2Ts were lately noted shunting in Swindon Works.

A good many of the names carried by the latest 70xx "Castles" have been borne previously by two or even three other engines of the class, which were subsequently renamed. Details of the latest namings have appeared in the "*M.M.*"

Britain's Oldest Working Locomotive Retires

After 93 years of sturdy service British Railways (London Midland Region) locomotive No. 58865 has recently made the last and longest journey of her career—from London to Derby for breaking up. There was a time, 93 years ago, when this engine, then No. 37 of the North London Railway, was the pride and joy of Victorian London as she busied herself with passenger trains between South Acton and Hammersmith.

In 1872 she acquired two more wheels, thus becoming an 0–4–2T, and a crane and the number 29 also were added. As works shunter and crane engine she did the "chores" at Bow Works, pushing and shoving broken down engines to the "operating theatre" and craning heavy weights at the dictates of her successive masters, L.N.W.R., L.M.S., and L.M.R.

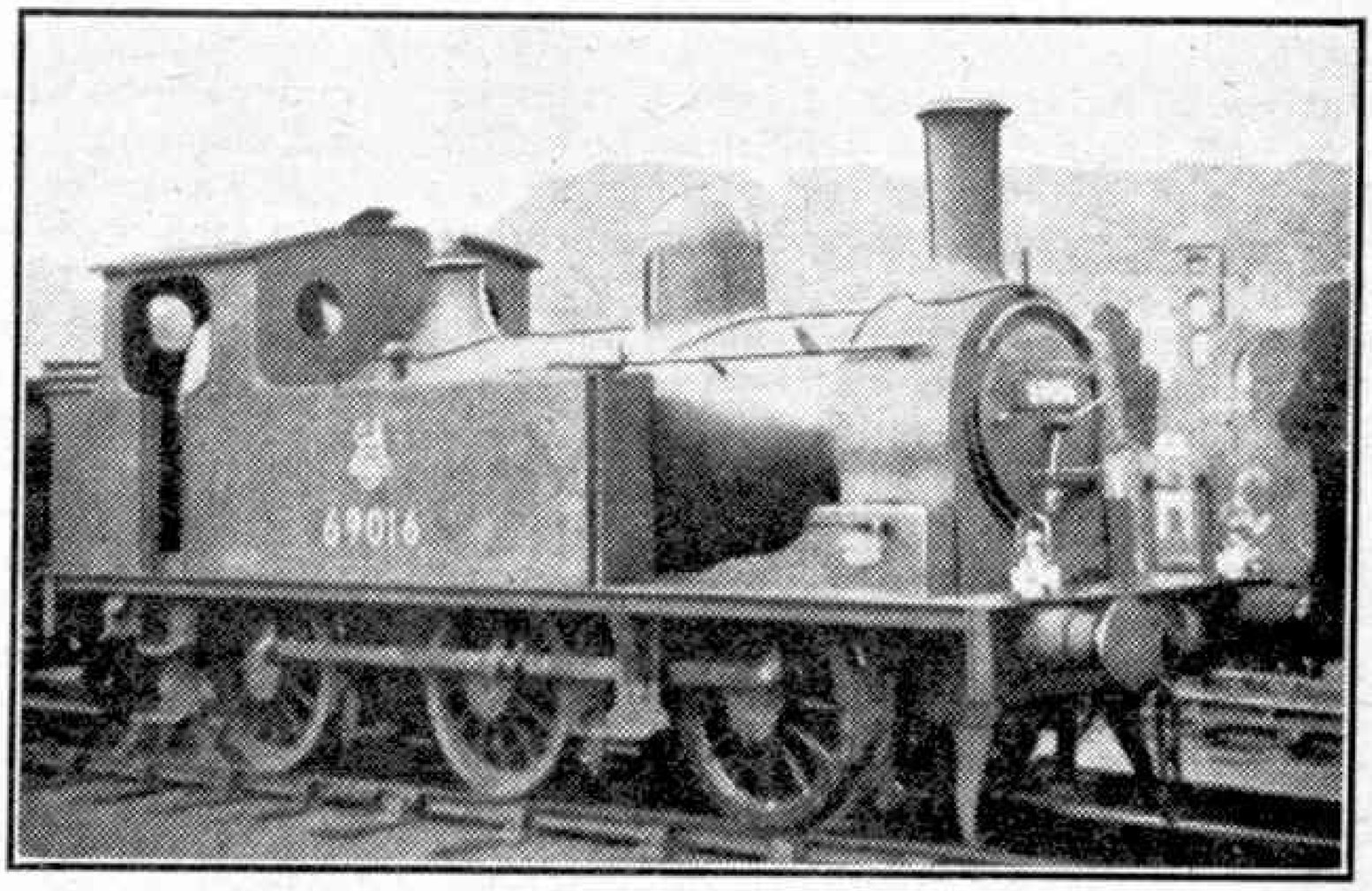
London Midland News

The layout of platforms and tracks and signalling at Euston have for some time been regarded as complicated and in need of modernisation. Work is soon to begin on a scheme of improvements that will take about two years. It will include the lengthening of six platforms, the provision of a power-operated signal box, with colour-light signalling and complete track circuiting, the removal of a road bridge and a remodelling of the lines in and outside the station. This will benefit traffic operation at that busy terminus to a considerable extent.

The Great Hall at Euston, adjacent to the main booking office, is a remarkable example of decorative architecture. It was designed by Hardwick 105 years ago, with a unique ornamental ceiling said to be the largest of its kind in the world and having no supporting columns; the only one like it is in Buckingham Palace. Redecoration has recently been going on, which is a big undertaking, the colour scheme now employed is as nearly as possible that proposed by the builder over a century ago.

A remarkably equipped carriage shed and cleaning depot is taking shape near Willesden Junction. It will cater especially for sleeping cars. Cleaning, servicing and light repairs on the cars or other coaches will be effected in successive stages as the vehicles are drawn through by electric winches. There will be a laundry for washing linen, two 30,000 gall. water tanks, steam supply system, gas and electric charging mains, vacuum cleaning apparatus, new roadways and sidings, kitchen and canteen.

The 4–8–4 diesel-mechanical main line locomotive No. 10100 was recently noted at Derby in apparently complete condition. No. 10800, the light mixed traffic diesel-electric locomotive, has lately been engaged in freight haulage between Bletchley and Banbury, with trips on to the W.R. line.

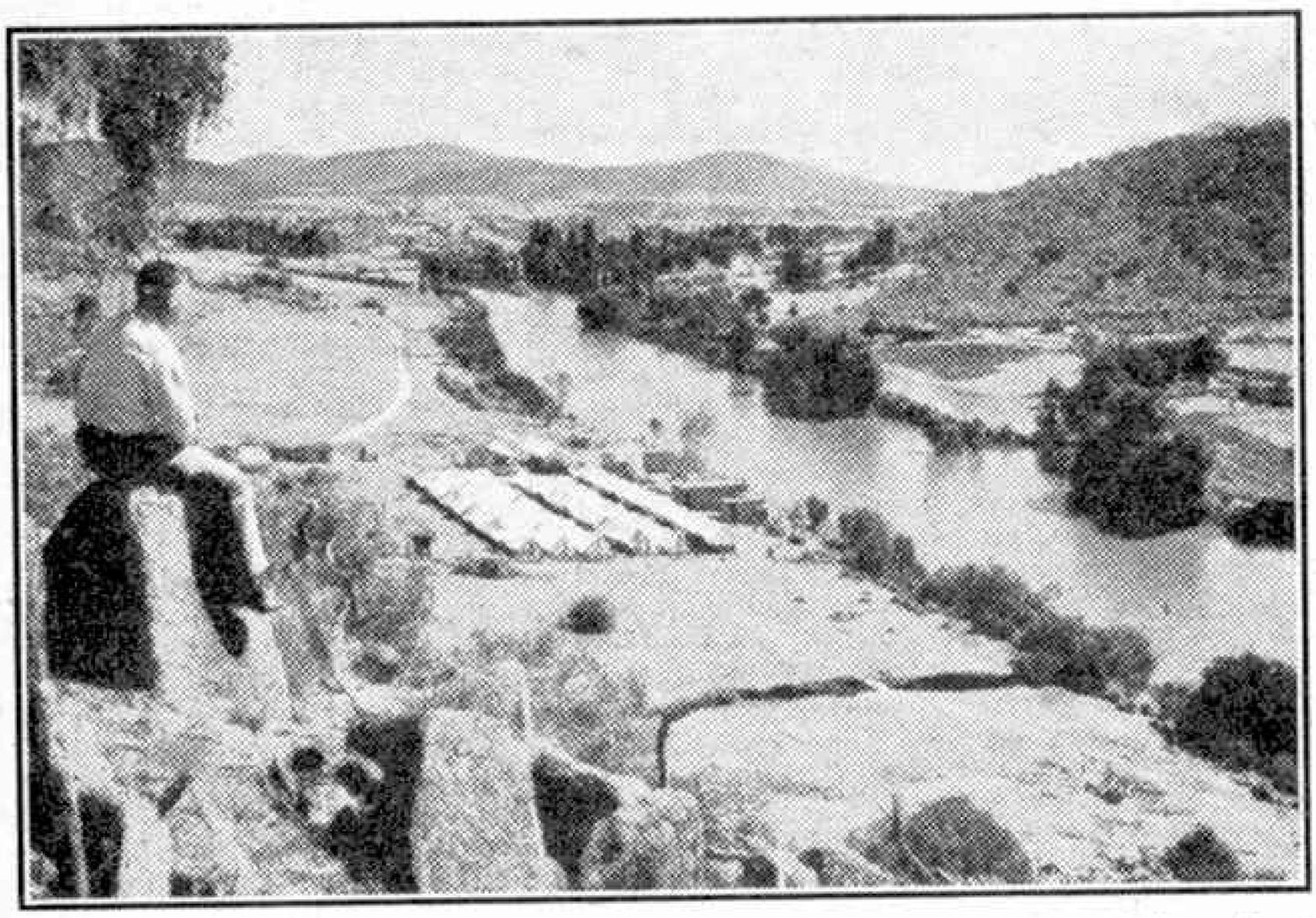


A North Eastern type "J72" shunting tank that appeared last year as B.R. No. 69016. This "new-old" little engine was photographed at Scarborough by L. W. P. Reeves.

Harnessing Australia's Rivers

By Arthur Nettleton

IN the United Kingdom we are building many new power stations to increase our electricity supplies, but Britain is not the only country in urgent need of electrical projects. Australia too has her problems, and engineers in New South Wales have started a scheme that ultimately will become one of the largest hydro-electric systems in the world. Australian farming will also benefit from this scheme, for the aim is not merely to harness the waters of certain rivers so that they drive generators, but also to release the water for irrigation purposes. A large area of land at present dry and unproductive will thus be made fertile and suitable for cultivation.



The Snowy River at Jindabyne, near which one of the seven great dams that will store up its waters is being constructed.

The region where this modern engineering miracle is coming to life comprises a stretch in the south-east of New South Wales, near its border with Victoria. This is about 100 miles long and 30–50 miles wide, and it is situated in the Snowy Mountain area, a locality in the heart of the Australian Alps. There the Snowy River, formed by the melting snows that provide a fine winter sports ground, rushes downward towards the sea. In its headlong race it drops 7,000 ft. in 300 miles, and it is this tremendous source of power which the Commonwealth Government are now beginning to tap, first for electrical purposes and secondly for irrigation. It is estimated that the overall cost of the scheme will run to £200,000,000, though half of the sum will be spent on plant and transmission lines.

Other rivers that figure in the project are the Murray and the Murrumbidgee, which will be used to carry the water for irrigation as well as to help the power scheme. Further water is to be impounded by diverting several small rivers into the Tumut River, on the opposite side of the Snowy Range to the Snowy River, and an intricate network of tunnels will connect the various sections of the enterprise.

Seven monster dams are being built to impound the water from the rivers, and the total length of the tunnels that are being bored through the mountains is 86 miles. There will be more than 490 miles of race lines, along which the fast-moving torrents will be conducted to 16 power stations.

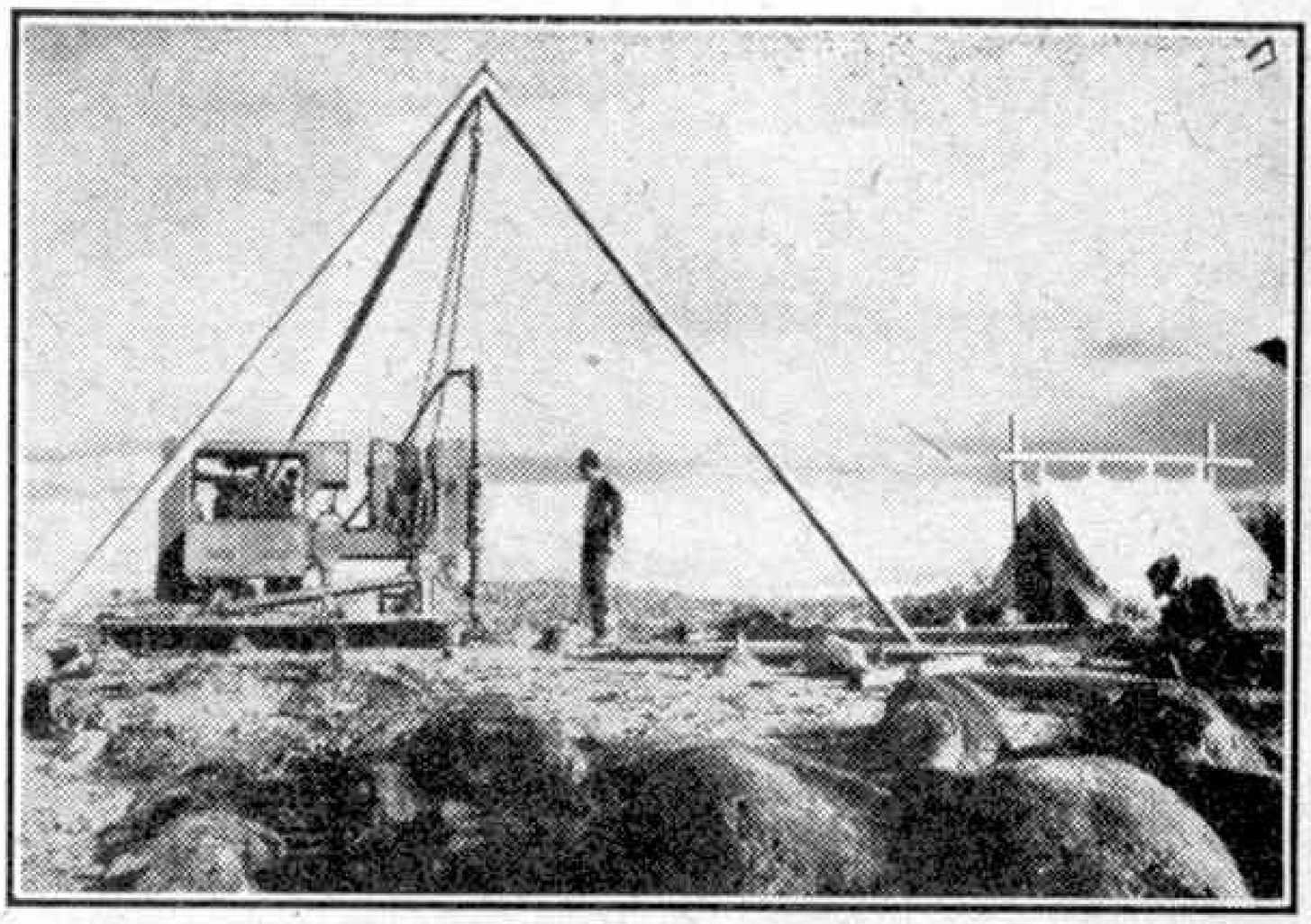
Altogether these generating stations will eventually be producing 2,860,000 kW, or more than 20 times the output of the gigantic new power station opened at Kingston, England, in 1948. In addition, tracts of land as yet undeveloped will be watered and developed for farming.

It was indeed the possibility of irrigating this rich but unexploited territory that first focussed attention on the potential value of the Snowy and Tumut Rivers. The idea of utilising their waters for irrigation was originally considered in the 1880s, and since 1884 various schemes have been proposed both for that purpose and for the generation of cheap electricity. But until 1946 the most ambitious scheme concerned envisaged only one-tenth of the power production that is now becoming a reality. In that year, and in 1948 and 1949, intensive investigations were carried out to determine whether, with the help of our present-day engineering skill, a greater area could not be harnessed.

One of the marvels of the present project

is the speed with which it has been planned. One reason for this haste is that the future of Australia is largely dependent upon adequate supplies of electricity. The present population of the Commonwealth is roughly 8,000,000, but during the next 50 years new industries are to be established in many parts, and these will enable Australia to provide for a population of 20,000,000.

Without much larger electricity supplies this expansion cannot be entertained. Hence the importance of the Snowy Mountain hydro-electric scheme, the capacity of which will be greater than that of the whole of the steam and hydro-electric generating stations in the Commonwealth at the present time. In addition, the amount of water that will become available for irrigation each year would be enough to fill Sydney Harbour five times, although this runs inland a distance of 13 miles and has an area of 22 square miles.

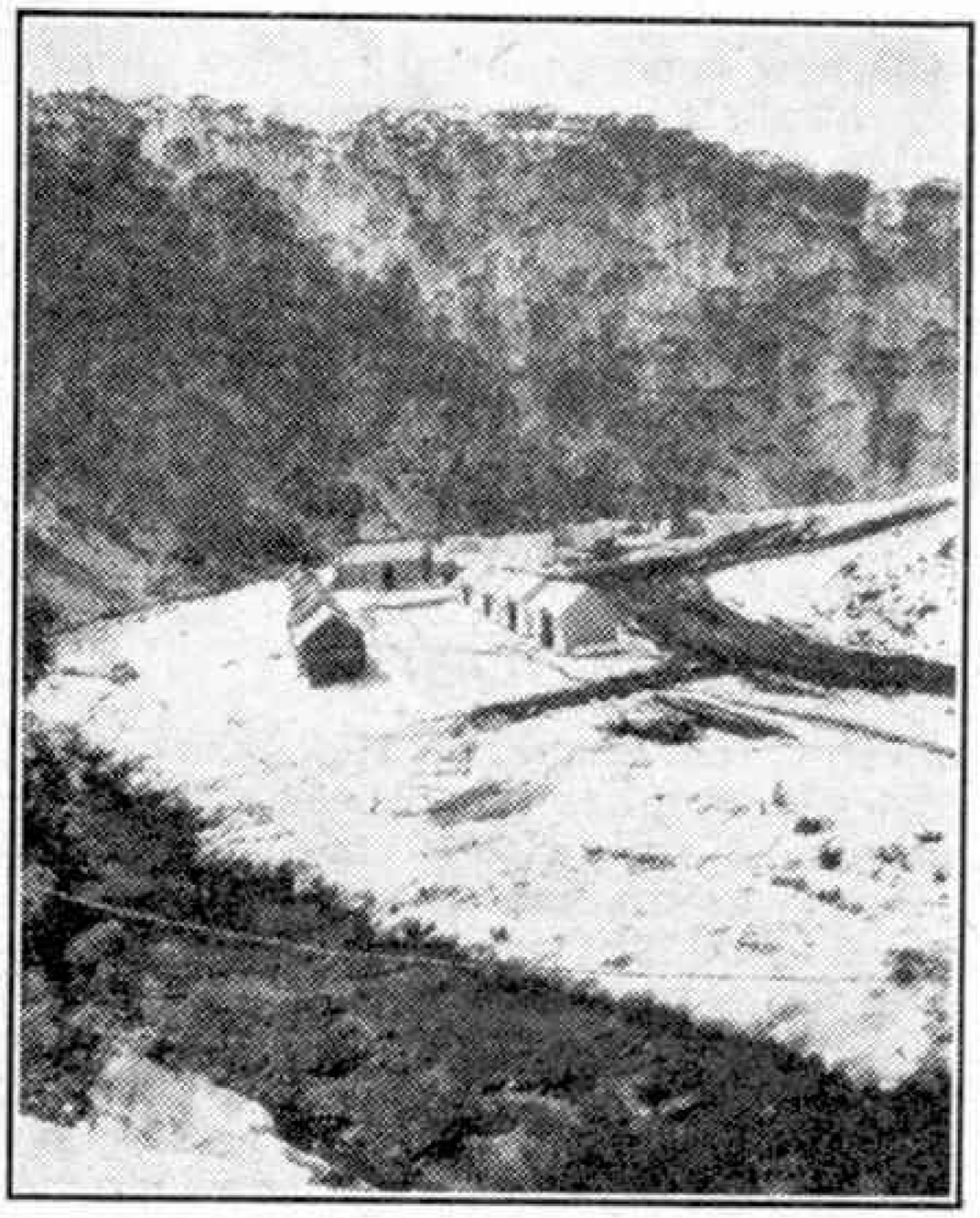


Drillers at work on the site of the Snowy River dam at Jindabyne. In all seven big dams are being constructed.

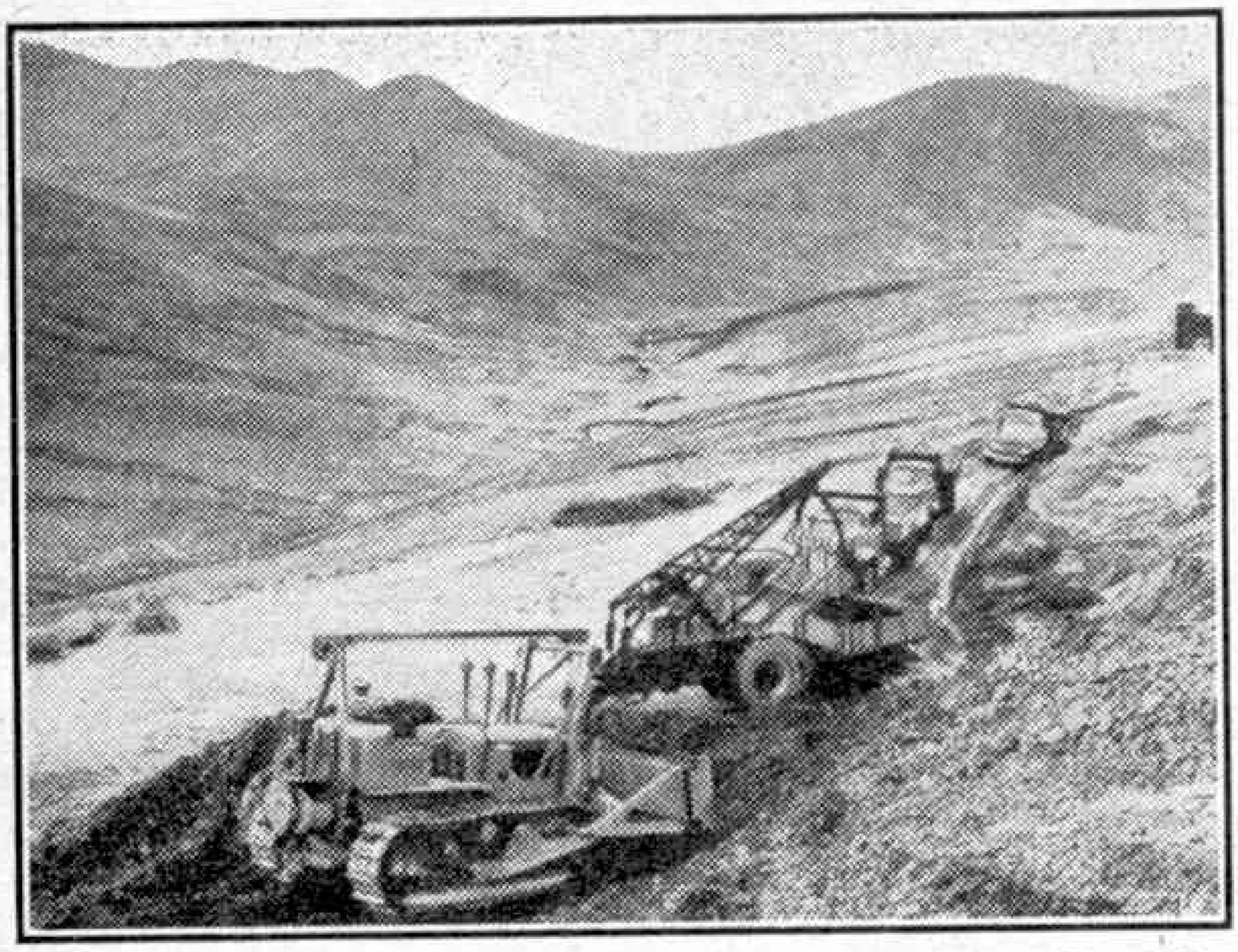
To provide headquarters and a main stores depot for the project, a new township laid out on modern town planning lines is being built on the Monaro High Plains, 260 miles from Sydney. It will accommodate a population of 2,500, and the cottages now being erected have all-electric equipment and a hot water service. Schools, recreation fields, and shops are going up rapidly, so that the necessary personnel to carry out the hydro-electric scheme can be recruited and moved in at the earliest possible moment.

Much of the preliminary work to harness the mountain torrents has already been completed, but some arduous tasks lie ahead. The most prodigious feats will be to excavate the tunnels. These will vary in diameter from 19 to 44 ft., and will be pushed through the mountains in some cases at a depth exceeding 3,000 ft. The tunnelling operations, in fact, will probably cost no less than £40,000,000. New roads are having to be built into the mountains, for the region is wild untamed country, and the survey parties had to use pack horse teams in the initial investigations into these remote areas.

The longest tunnel will be 17½ miles in length, but the most amazing will be one 15 miles long that will run through the heart of the snow-capped ranges to connect the Snowy and Tumut Rivers. By a novel arrangement, operated in accordance with the levels of these rivers, water will be able to flow in either direction between them, so that the supply for hydro-electric purposes will be constant. This particular tunnel, one of the marvels



A snowy scene in the Australian Alps. The creek seen in it joins the Tumut River, on the opposite slope of the mountains from the Snowy River, with which it will be connected by a tunnel 15 miles long.



Bulldozing for road metal well above the snow line on Mount Kosciusko, in the Australian Alps.

of the modern engineering world, is being cut to a diameter of 30 ft.

Other engineers are already preparing the foundations of the seven great dams behind which the water will be stored before it is led along steeply-descending channels, and through monster pipes, to reach the hydro-electric plants of the 16 power stations. These stations will not be set in motion simultaneously, but are to start operating in turn as soon as they are ready. Thus, although the scheme may not be completed until 1965, some of its benefits will become available long before that time.

The project will finally expand into the greatest electricity undertaking in the Empire. Not even in Canada, where hydro-electric power has been one of the major factors in the Dominion's remarkable progress, has water power been tapped to this extent. To generate an equal amount of electricity by steam-driven generators, more than 4,000,000 tons of coal would be needed each year. Water power will do it equally well, and at very little cost.

The new source of electricity will enable Australia to extend her industries and expand her farming at the same time. In particular, it will greatly facilitate aircraft production, which will become a priority industry. The wisdom of duplicating British war industries in the Commonwealth indeed has given greater urgency to the Snowy Mountains scheme.

Britain moreover has further interests in the project, for the Commonwealth Government have sought and obtained official support for recruiting experts in Great Britain, as part of their emigration plans. Other technicians have gone to Australia from Sweden and Norway, countries that have long harnessed their fast-moving rivers as a means of generating electricity, though never on the tremendous scale now being promoted "down under."

Australia's own scheme, when completed, will be comparable with the vast Tennessee Valley Scheme in the U.S.A., and it will demonstrate that the British Empire has resources of immense importance in this electrical age. The Snowy Mountains enterprise may also enable Australia to establish plants for the development of atomic energy.

A United Nations Skyscraper

The first of the buildings of the United Nations Organisation in New York is the 39-storey Secretariat Building, in which there are about 12,500 tons of structural steelwork. This resembles a huge slab stood on one end. Its length, parallel to the East River, is nearly 100 yds., but its width is only 24 yds., and it towers to a height of 500 ft. above its entrance level.

The two narrow faces are unbroken stretches of white Vermont marble, with no interruption from top to bottom of the two 500 ft. stretches. The wide faces, one looking out over the river and the other towards the centre of New York City, are even more remarkable, for each shows an almost transparent expanse of glass nearly twice the area of a football field, with bands of slightly tinted or black glass and stretches of metal grill work at three floors on which there are no windows and in which air conditioning equipment is placed. Besides towering 39 storeys up into the sky the building has three levels below ground.

In this building there are 18 passenger lifts, two service lifts and a freight lift. The high speed lifts run at 1,200 ft. per minute, or nearly 14 miles per hour.

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With certain exceptions, which will be indicated, these should be ordered through a bookseller.

"THE NAVY OF TO-MORROW"

By Captain Frank Shaw
(Werner Laurie. 9/6 net)

Our Navy has been a source of pride to us for centuries, and everybody will revel in this fascinating story, written by a Naval expert. It centres around H.M.S. *"Illustrious,"* the famous aircraft carrier, and gives Captain Shaw a splendid opportunity of conveying something of the traditions of the Royal Navy, the wonderful spirit of which has persisted through the ages, and of looking ahead to the years to come, which will be equally remarkable for the efficiency and devotion to duty of our seamen. A foreword by Admiral Denis Boyd, C.B.E., D.S.O., the first Captain of the modern *"Illustrious,"* speaks of the pride of service that is the hallmark of a great nation, and certainly distinguished the men of the ship that he had the privilege of commanding.

The first *"Illustrious"* was a 74-gun ship of the line launched in 1789, which played a notable part in warfare in the Mediterranean, and after being badly knocked about became a total wreck during a gale. The second *"Illustrious"* also was a 74-gun sailing vessel, which had a life of 60 years, and the third was a warship of the pre-Dreadnought era, which never had an opportunity of showing her powers in warfare.

The career of the aircraft carrier, the fourth vessel of the name, has been full of action and excitement. "Swordfish" from her decks crippled the Italian Navy in the famous attack on Taranto, and later she underwent her fiercest ordeal in protecting the Malta convoys, finally suffering damage so extensive that it was necessary to take her to the United States for refit. Service in the attack on Madagascar was then followed by operations in the Far East, where again she sustained heavy shocks, including suicide attacks by Japanese airmen, an ordeal that she survived with credit and glory.

The story of these actions is graphically told by Captain Shaw, who as he proceeds with his story tells us also of the evolution of Britain's sea power, describes in detail how a boy goes to sea and progresses in knowledge and ability, and gives an exhaustive survey of the bridge and control deck of the aircraft carrier. Every line is full of interesting information and splendid reproductions of photographs add greatly to the attraction of the story.

"THE WATCHMAKERS AND CLOCKMAKERS ENCYCLOPÆDIC DICTIONARY"

By Donald de Carle, F.B.H.I.
(N.A.G. Press. 30/-)

This work is the most complete thing of its kind that has so far appeared. Almost every conceivable detail of time-measuring mechanism is listed and clearly described, and in many instances there is also a good illustration. The book does not confine itself to details of clocks in general use to-day, but also goes into very full explanations of older methods of time-measuring, and gives space to materials and tools used in clock and watch making. To bring the work right up to date, all the electrical terms likely to be needed in horology are included.

The high quality and uniform excellence of the drawings is one of the best features of the book, and the only noticeable defect is that the double three-legged gravity escapement is incorrectly shown with *both* gravity arms resting on the pendulum.

At the end of the main part of the book are appendices explaining antique clock and clock-case terms, giving English period styles and dates, listing the metals used in horology and conveying other useful information, including notes on the standardisation of supplies of watch material. There are also illustrations and descriptions of watch and chronograph parts, with the title of each part given in six languages, and a section dealing with styles of watch hands, glasses, winding buttons, and cases, clock-chimes, with descriptions and musical notations, and workshop hints and helps.

T. R. Robinson.

"THE BOYS' BOOK OF ROCKETS"

By Raymond F. Yates (Werner Laurie. 8/6)

The war made us all familiar with the principle of the rocket. Here we have a brief but interesting and authentic account of this remarkable development, which opens many startling prospects for the future.

These prospects include the possibility of escaping from the Earth and exploring space. This is evident from the start, the first chapter dealing with adventures high above the Earth in balloons, in which a record distance of nearly 13¾ miles was reached in 1935 by two daring Americans. When compared with the limitless distances in space this seems small, and a rocket ship offers the only solution of the problem of pushing further.

The principle on which such a space ship would work is explained, and the problems involved in constructing it and providing the necessary fuel are fully dealt with. On the practical side good accounts are given of the many experiments that have followed the production during the war of the German V-2 Rocket. The application of the rocket to aircraft also is dealt with, and the book ends with brief stories of the outstanding experimenters in the jet propulsion field, including Congreve, the British pioneer of war rockets, and Frank Whittle, whose work made the jet plane a practical means of travel in the air.

The book is well illustrated by diagrams and half-tone reproductions of interesting photographs.

"ELECTRO-PLATING FOR THE AMATEUR"

By L. Warburton (Percival Marshall. 5/-)

The objects of the author are to give useful information about electro-plating on a small scale, and to emphasise the details to which careful attention must be given to attain success. The methods described are not just adaptations of commercial methods to home workshop conditions; they are the results of several years of experiment in which reliable ways have been worked out for each of the processes described.

The subject is well developed, beginning with the supply of current, the construction and fitting of the plating tank, and the preparation of the base. The various electrolytes required are then fully dealt with, and there are special sections on chromium plating, the treatment of non-conductors, and anodising. This excellent booklet is amply illustrated by drawings.

"SKID WILD, SPEEDWAY RIDER"

By Leslie Morley (Macdonald. 6/-)

Skid Wild is a speedway rider who works out a new method of skidding that adds greatly to the thrills of the sport. The motor cycles he rides are manufactured by a cousin in a small factory near a famous stadium, the track of the Silver Eagles. Skid and his cousin have a rival who stops at nothing to gain his own ends, and his efforts to ruin them and the Silver Eagles lead to a series of adventures in the factory, in the pits of the stadium and on the track itself.

The story is one that will appeal to all boys who are interested in motor cycling generally and in dirt track racing in particular. It is full of action and movement.

Have You Ever Thought About This?

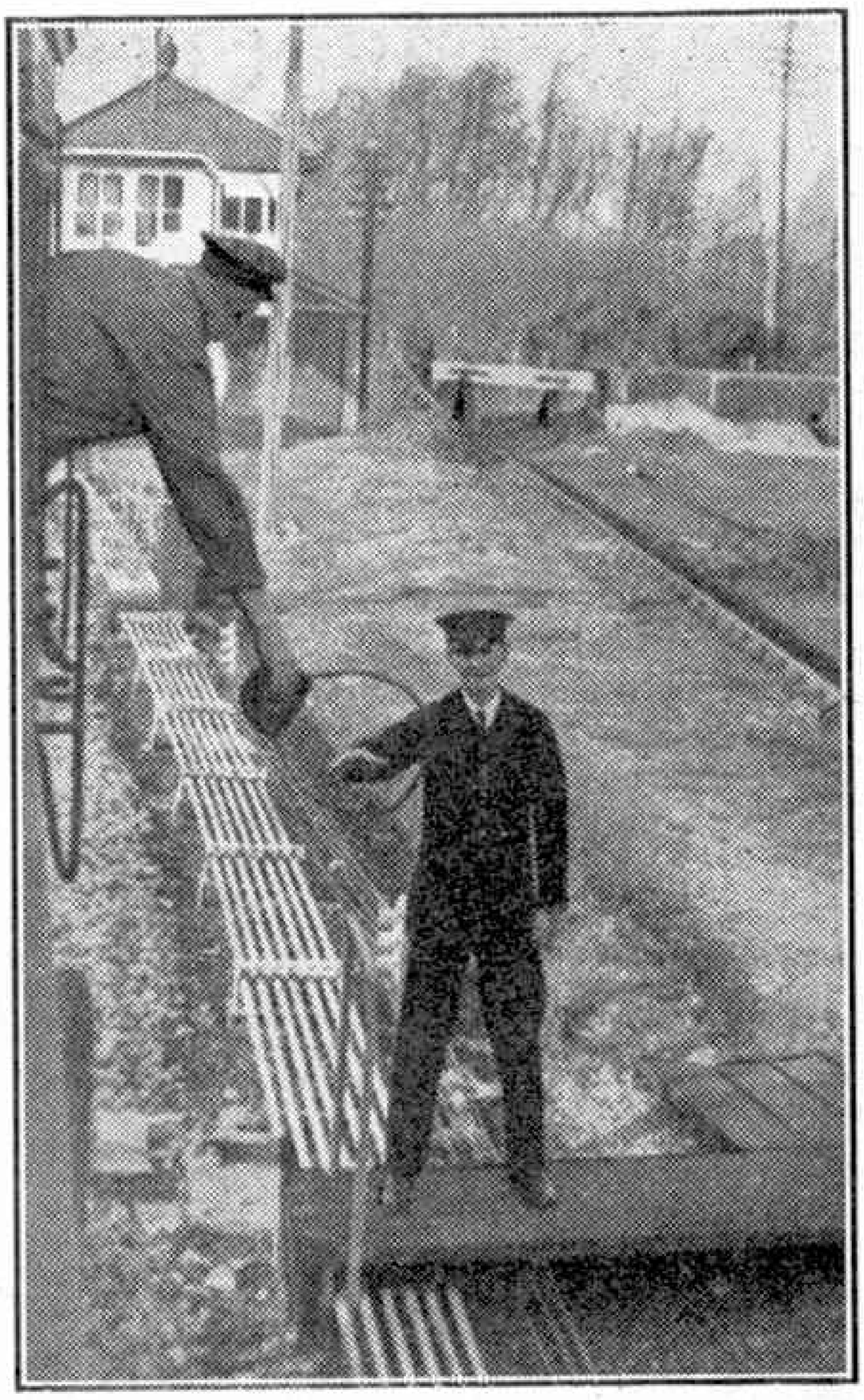
Single Line Working

By "Shed Superintendent"

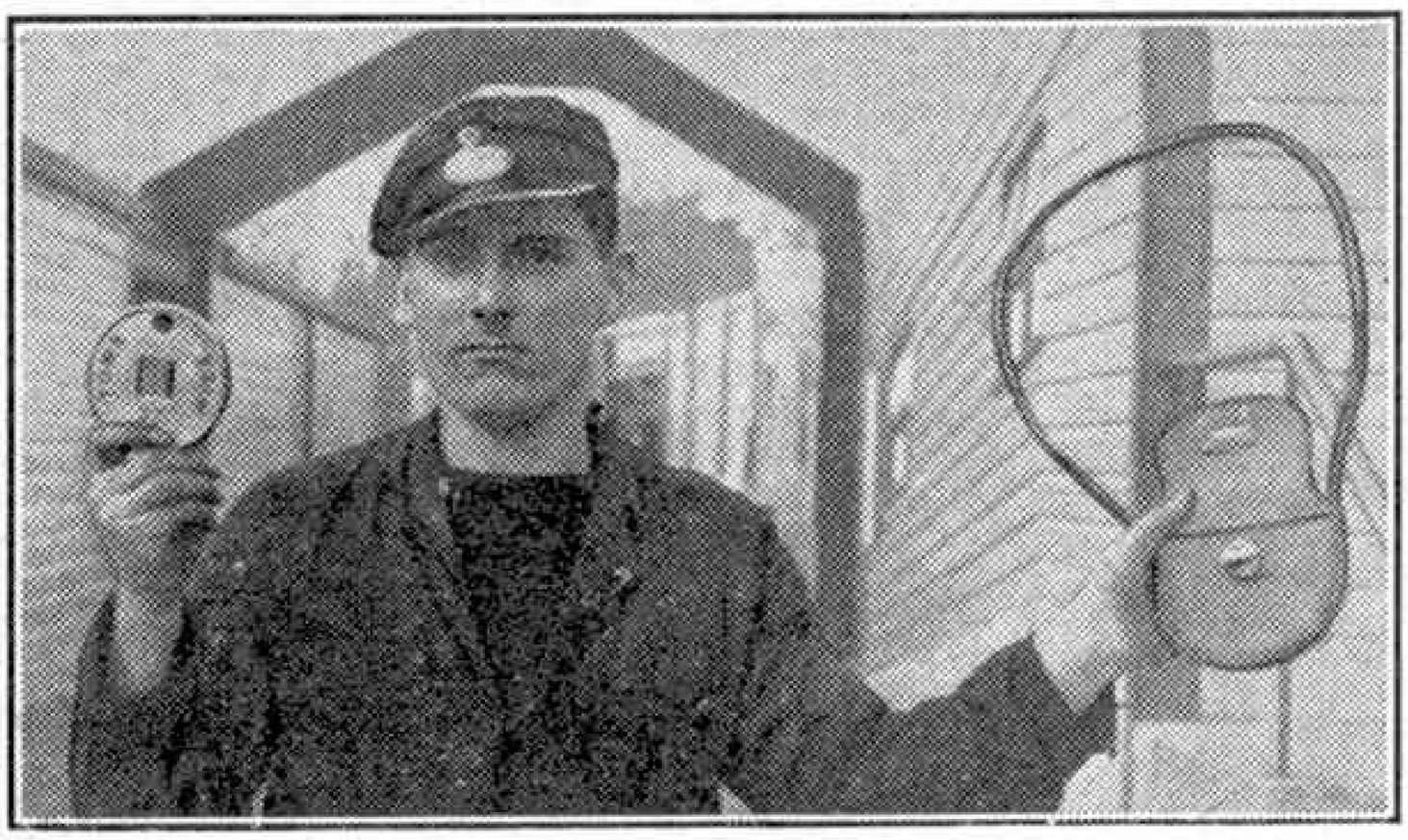
DO you realise that, taking the world's railways as a whole, the proportion of single line is far higher than double line? Only in densely-populated areas are double lines, and sometimes quadruple lines, required to deal with the traffic. The signalling arrangements for single lines in this country are fairly complicated, but will be more easily understood if we trace their development from a century ago.

To avoid the possibility of head-on collisions it was at first a rule that each train must be accompanied by a pilotman, and as there was only one pilotman for each length of single line, he could not of course be on two trains at once. It was then realised that a token, such as a truncheon or metal object, could be used for the same purpose, to save paying wages to a human pilotman. The signalmen on British railways in the early days were "policemen" and wore police uniforms, so that the idea of substituting a truncheon was a natural one, and quite safe provided only one such token was in use for each single-line section.

One token, however, could only pass backward and forward alternatively over a section of single line, and two trains could not follow one another in the same direction. The solution to this problem was to show the token to the driver of the first train and hand it to the driver of the following one. This system was improved by the issue of a written ticket to the first driver by the signalman at the station in possession of the token, but occasionally serious mistakes were made.

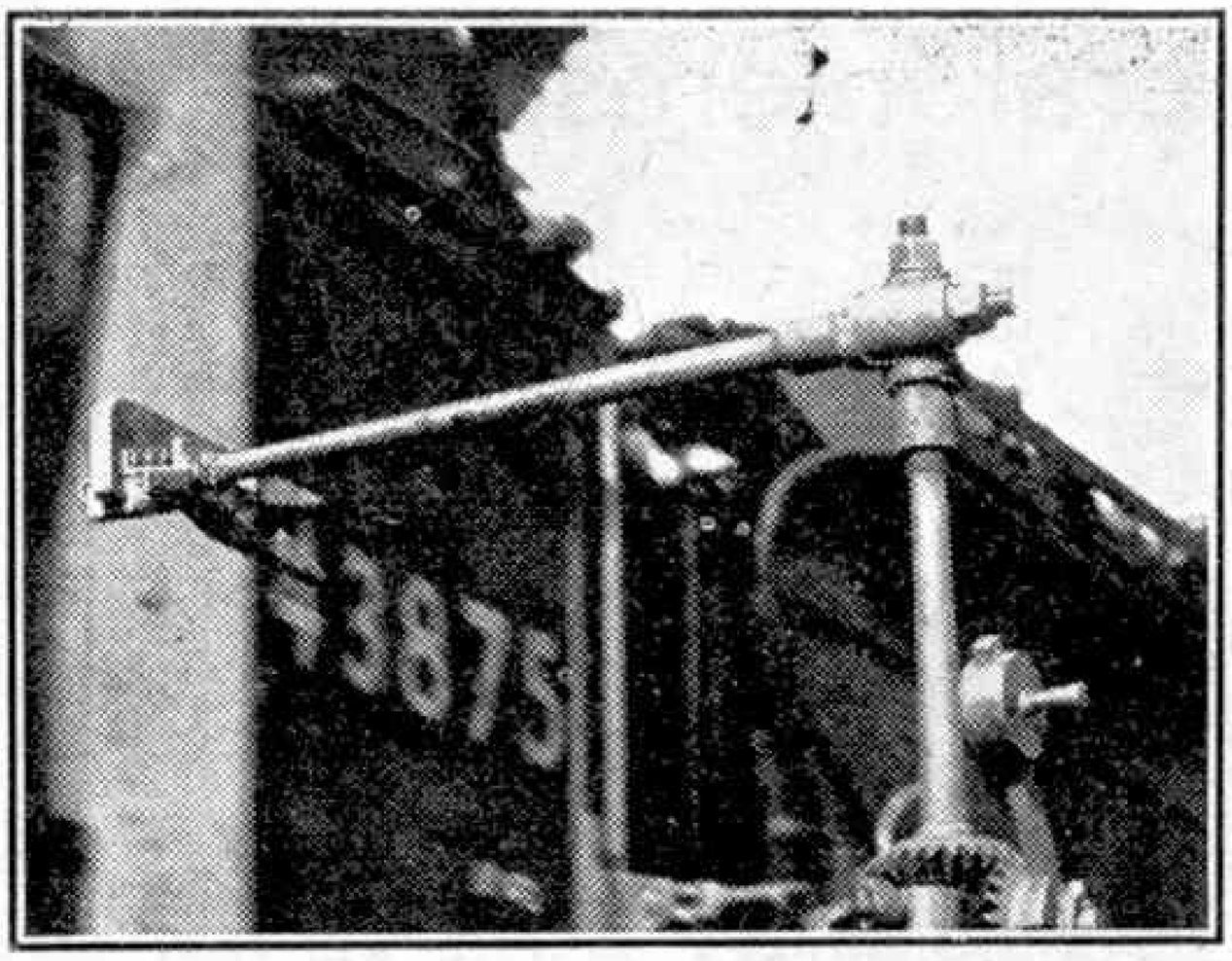


The driver of a push-and-pull unit leans out to hand over the tablet pouch to the waiting signalman.



The fireman is holding a single line tablet in his right hand, while in the other he has the pouch, with hoop, in which it is carried.

In order to eliminate the human element an electro-mechanical apparatus was devised, known as the electric tablet system. Briefly, this consists of two slot machines, one in signal box "A" and another in signal box "B," which are electrically connected. Round metal discs called tablets are stored in these machines, and the total number of tablets varies according to the number of trains likely to follow in succession in each direction. If the total is



Mechanical ground tablet catcher ready to collect the tablet from the engine at the end of a single line section.

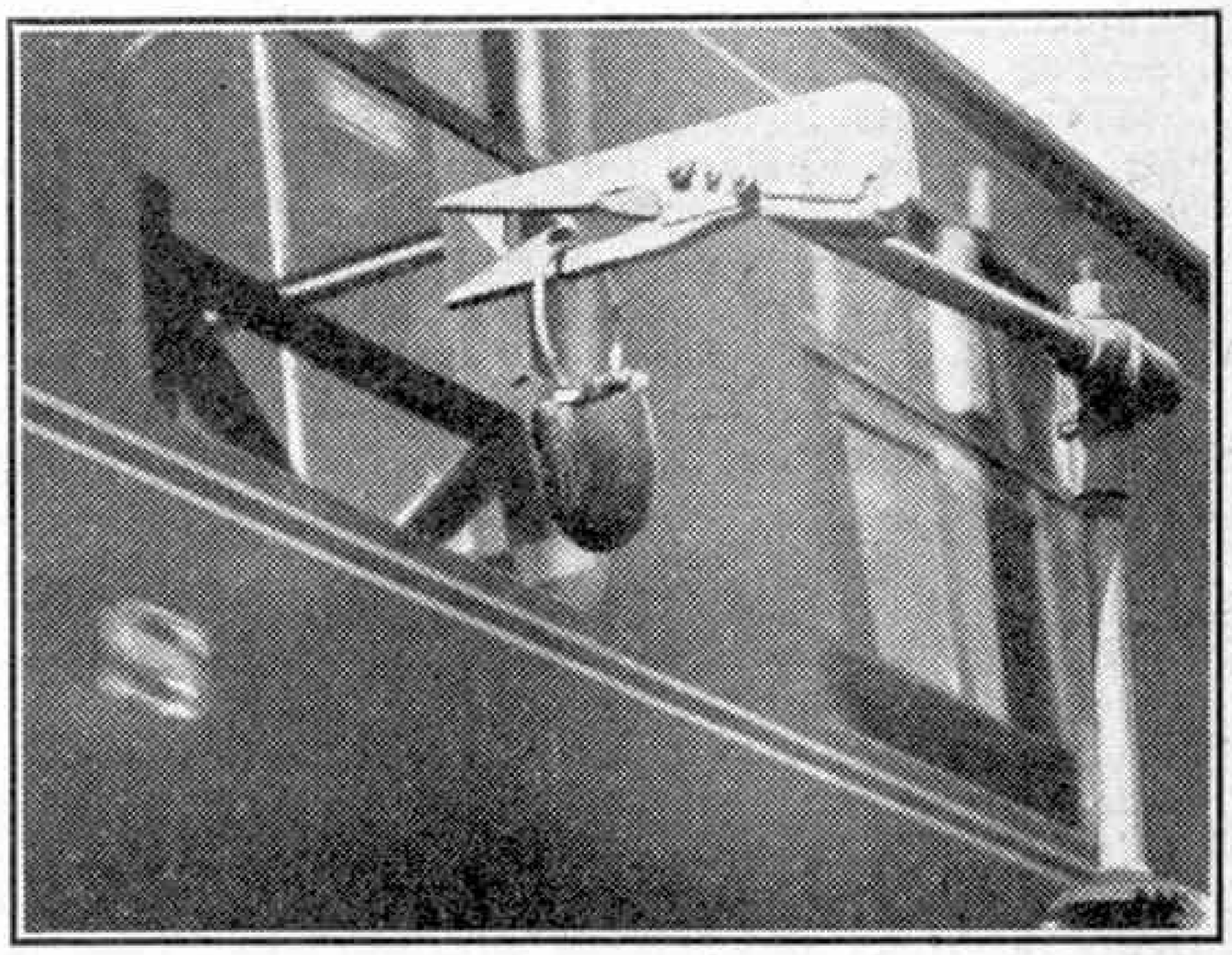
12, then all 12 tablets must be in the machines before one can be drawn out. There may be four tablets at "A" and eight at "B," or six at each place, but if the sum of the tablets in the machines is not 12, the signalman at either end cannot release their instruments. Thus two tablets cannot be in use at the same time. If a tablet becomes lost, a human pilotman must be used until it is found.

Each tablet is marked with the names of the places between which it operates, and when drawn out by a signalman, it is inserted into a leather pouch with a steel hoop. The hoop is used for collection and delivery of the pouch between the driver and signalman, which is done by hand at slow speeds.

Where long stretches of single line are used for fast traffic, the exchange of pouches is performed by lineside apparatus similar to that used for exchanging mail-bags, but instead of nets catchers are fitted on the sides of the engines and on posts fixed by the lineside. This automatic tablet-exchange system was pioneered by Mr. Manson, then of the Great North of Scotland Railway, who refused to patent his invention as he believed that, in the interests of safety, it should be available for use on any railway without the hindrance of patents.

The pictures on this page show mechanical tablet catching on the Somerset and Dorset line. The apparatus used there is that introduced in 1905 by Alfred Whitaker, for many years in charge of mechanical matters on that railway. An arm projecting from the side of the engine, when set for exchange, has at its outer end a pair of jaws fitted with triggers that prevent the steel hoop on the pouch from rebounding off the jaw after being caught. The rear end of the jaw is constructed to carry the tablet to be given up, the pouch being held in a spring clip. For operating a section of single line there would be at the beginning of the section a ground column called a "deliverer" at one side of the line, and at intermediate crossing places a combined "deliverer and receiver" at each side of the line. This combined column has two arms, the upper one to receive the tablet and the lower one to hold the tablet to be picked up. Then a "receiver" like the one shown in the lower picture on this page is placed at one side of the track at the end of the section.

The arms on the columns normally stand parallel to the running track, but when it is required to exchange tablets, they are swung out at right angles to the line into such a position that they are ready to engage with the corresponding apparatus fixed on the locomotives. The moment the tablets are exchanged, the arms automatically swing back clear of the line to their normal position.

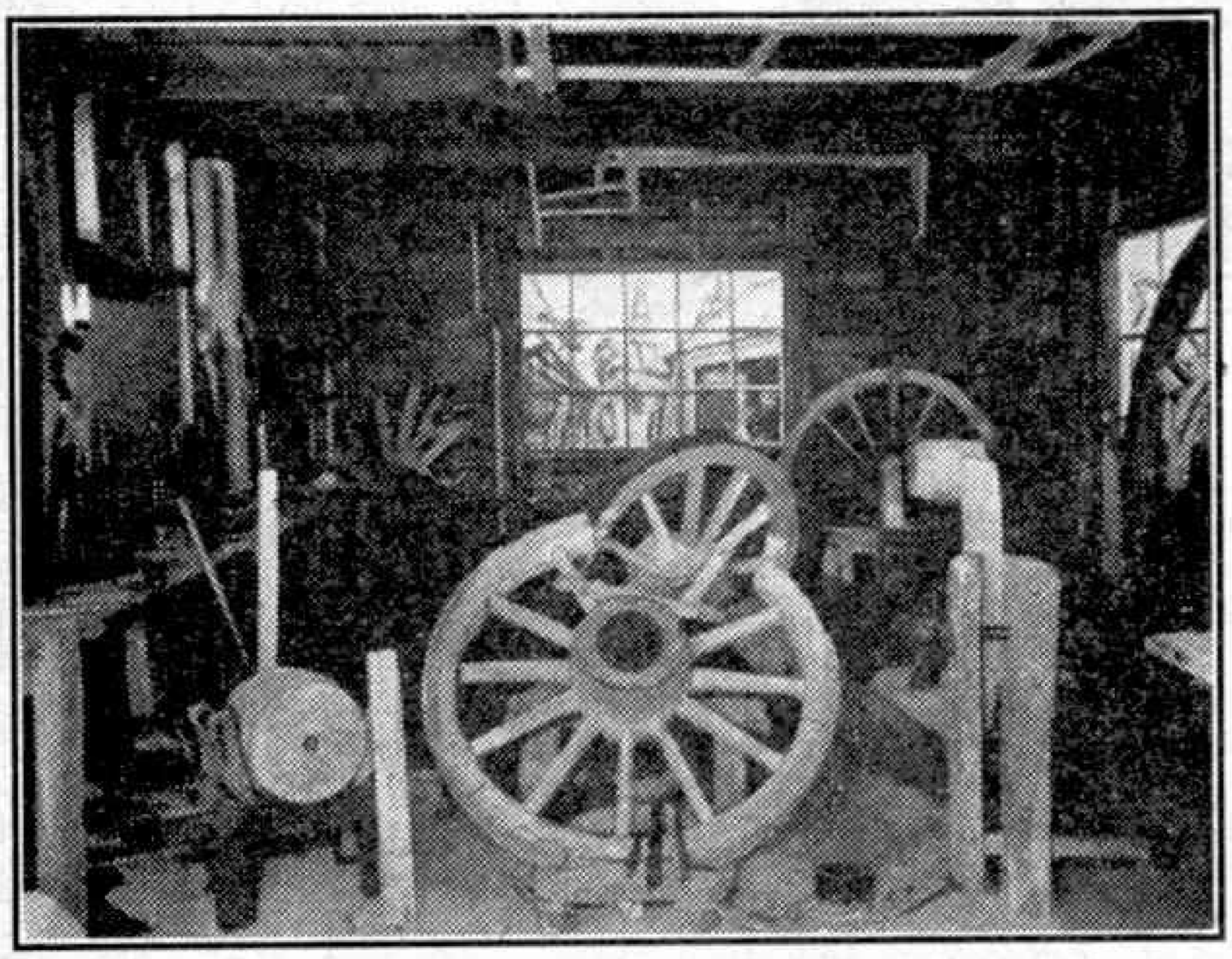


The tablet pouch caught in the jaws of the ground apparatus. The revolving arm has already swung round parallel to the track.

Of General Interest

An Early Country Craftsman's Shop

A very interesting addition made to the Science Museum, South Kensington, last November is a reconstruction of an early wheelwright's shop, in the Children's Gallery. The display is illustrated on this page, and relates to wheel making in particular, although most of the tools and equipment required for building the complete wagon are represented.



The early wheelwright's shop now to be seen in the Children's Gallery of the Science Museum at South Kensington. Photograph by courtesy of the Science Museum.

Wheelwrights have been making carts and wagons in England for at least 1,000 years. They were craftsmen in every sense, for their products were sturdily built and well suited for their purpose, and had graceful lines. Their activities also included making wooden agricultural implements, such as ploughs and harrows.

A Teddington Watch Race

Few of us realise what a wonderful mechanism a first-class watch is. We forget to wind our own watches, drop them on the floor and neglect to have them cleaned and oiled, and yet we expect them to work perfectly. The astonishing thing is that they do, and for this we can thank designers and makers, who work to remarkable limits of accuracy in making the many parts that go to a watch.

Some idea of the reliability of a good modern watch is given by the results of tests made in the National Physical Laboratories at Teddington. Originally these tests were made at Kew Observatory, where the watches were tried out over the time hurdles of a rigorous 45-day course. One wrist watch so tested showed an average variation of little more than a tenth of a second a day.

The tests were transferred to Teddington in 1912, and there tests of even greater accuracy began in March last. One of these, the Craftsmanship Watch Test for precision timekeepers, occupies about six weeks. Entries are timed in various positions and at different temperatures within a wide range, and to pass in the highest grade a watch must not lose or gain more than three seconds a day in any period of normal temperature. Even in the fourth or lowest grade the difference must be not more than eight seconds a day, and any watch that exceeds this limit just drops out of the test.

A Champion Timekeeper

The Swiss Government too makes special tests of watches, in which the conditions seem to be even more difficult to fulfil than those at Teddington. In a recent accuracy test at the Neuchatel Observatory each watch had to show a variation in the daily rate of not more than three quarters of a second up or down, while the greatest variation allowed for changes in positions was three seconds.

The tests were made in two separate runs, one of 45 days and the other of 30 days. The champion proved to be a stock wrist watch made in St. Imier, Switzerland, which showed an average daily variation of about a fifth of a second. Even this watch did not create a record, for other stock watches not entered have shown a mean daily variation of as little as 0.14 sec. and in one instance a mere 0.09 sec.

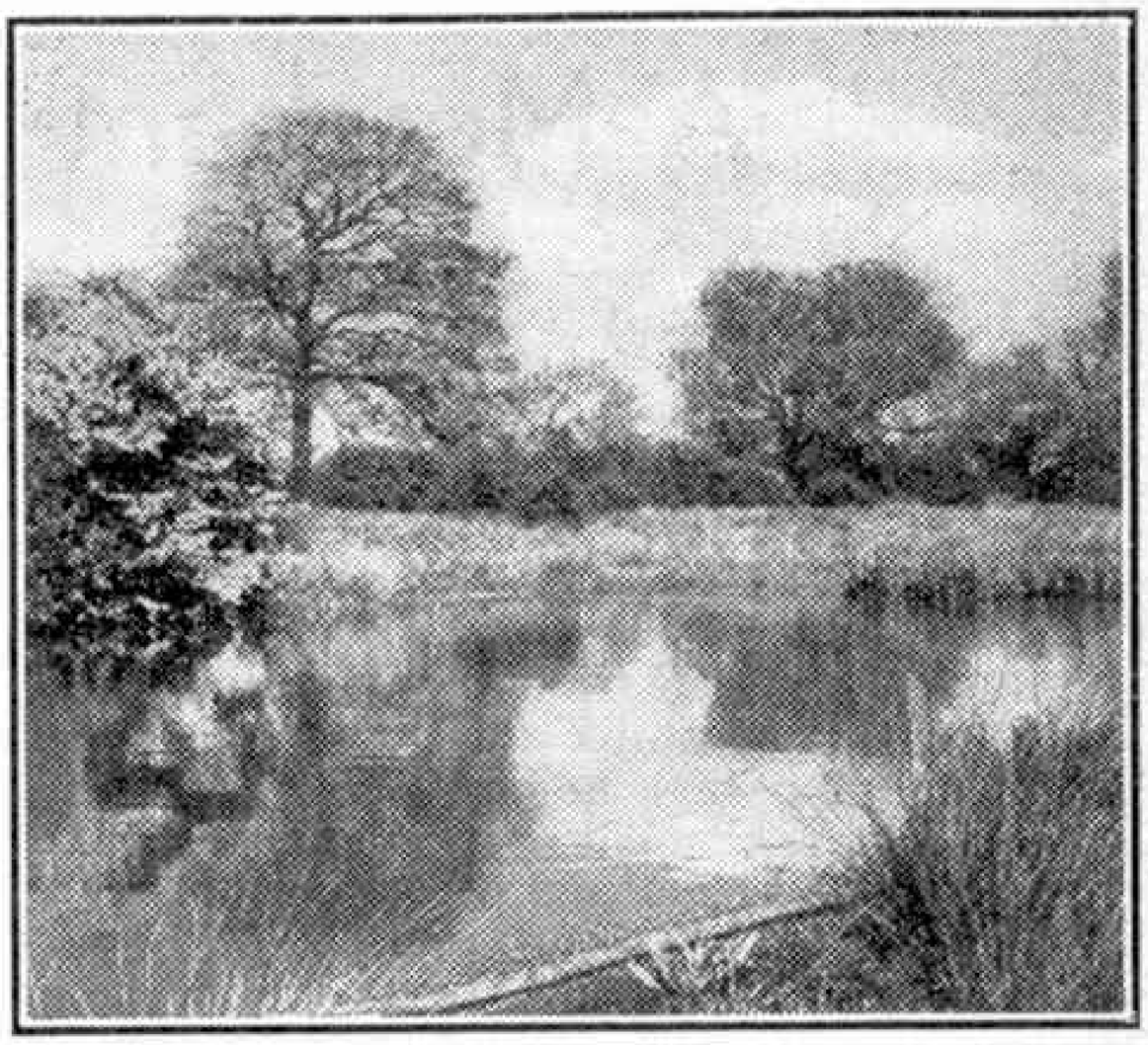
Photography

May Landscapes

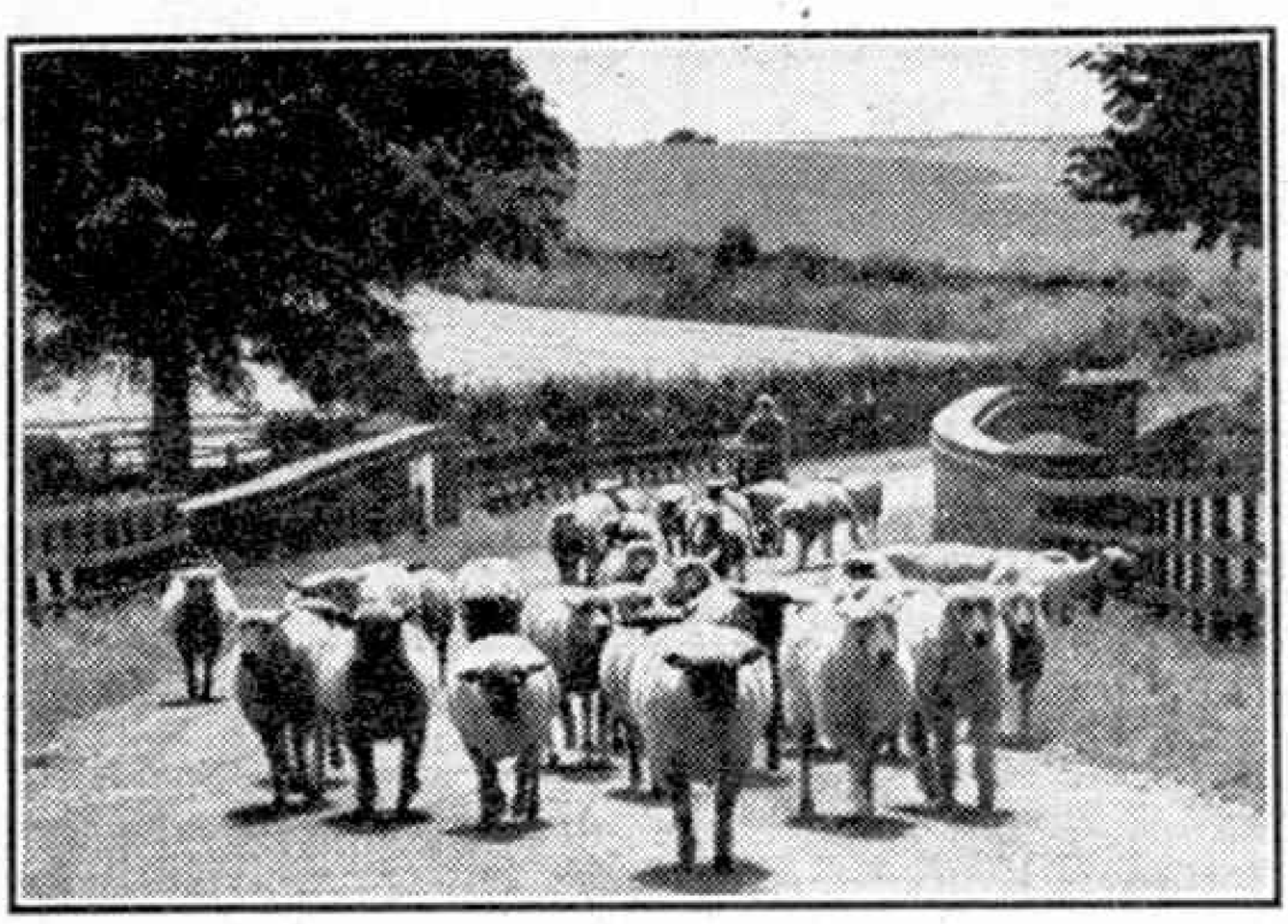
By E. E. Steele

ALTHOUGH the winter may extend into April, with cold dry winds, the month of May brings real sunshine and bright out-door conditions, with a host of flowers, and new, interesting things to photograph each day. The Wild Parsley blooms in creamy-white masses along the hedgerows and country lanes, and the landscape looks at its best and gayest. This is definitely the time to get into the country and "make hay while the sun shines!"

It will be best to load the camera with one of the "chrome" films, sold by all dealers. These films cost a trifle more than the variety known as "ordinary," but they are far more sensitive to colour, giving a satisfactory rendering of colours with the exception of deep orange and red, for which a "panchromatic" film must be used. Using a "chrome" film means that the green foliage and yellow flowers of Spring are not rendered a dark grey, and blue skies a blank white, as occurs with a colour-blind or "ordinary" film.



A pond in May. The illustrations to this article are by the author.



To pastures new.

As a "chrome" film is sensitive to yellow it means that a yellow filter can be used over the lens, which will hold back some of the excessive blue rays of light, and thereby allow the beautiful cloud shapes that we see to be reproduced on our prints, which makes such a difference in landscape work. Of course a yellow filter will hold back some of the light from entering the lens, and we must remedy this by allowing from two to three times extra exposure, depending on the depth of the yellow filter. A light yellow tint will do all that is necessary. With a box camera, which does not allow of variations in lens or shutter, it is best to work in the middle hours of the day to gain the maximum light. However, the "chrome" films are usually faster, and it is easy to try a filter on the last shot of the film to see what the effect will be.

As one moves about the country on a lovely May day innumerable subjects attract the eye of the photographer, but particular attention should be paid to horses in the fields. The mechanical tractor has almost ousted the horse from the farm, and it is becoming quite a rare sight to see horses working in fields. Another subject of everlasting interest is a flock of sheep in a country lane. It is a rather lucky chance to meet with this, but if they are seen it may be possible to choose an interesting turn in the lane and get all ready as the flock approaches.

In every village there is something to charm the photographer in the way of church, thatched cottage, stream, mill, or the good old village pond with its lively ducks, or an old inn with its painted sign. Many photographers have collected pictures of inn signs. These are always interesting, and reflect something of the jolly village community before the days of wireless and buses.

A village scene.

A Merchant Ship's Trials

By Patrick R. Darwin

EVERY ship built to-day is specially designed and constructed for some particular purpose, and every kind of cargo and each of the hundreds of different kinds of trade at sea demands a special type of ship. It follows then that due to this fact, and to the individual ideas and opinions of the shipowners, it very seldom occurs that two ships are built alike.

Bicycles and cars, implements and tools of various kinds, small units of machinery, and parts of engines and other mechanical devices can be subjected to an industrial process which we call "mass production." They are made and finished by machines in great numbers, all are exactly alike, and they require very little human guidance during their making. The result is greater speed of production and cheaper articles. Another advantage is that it is necessary to carry out tests or trials on only one of each series of articles, their uniformity and precision providing proof that all its fellows will give the same results.

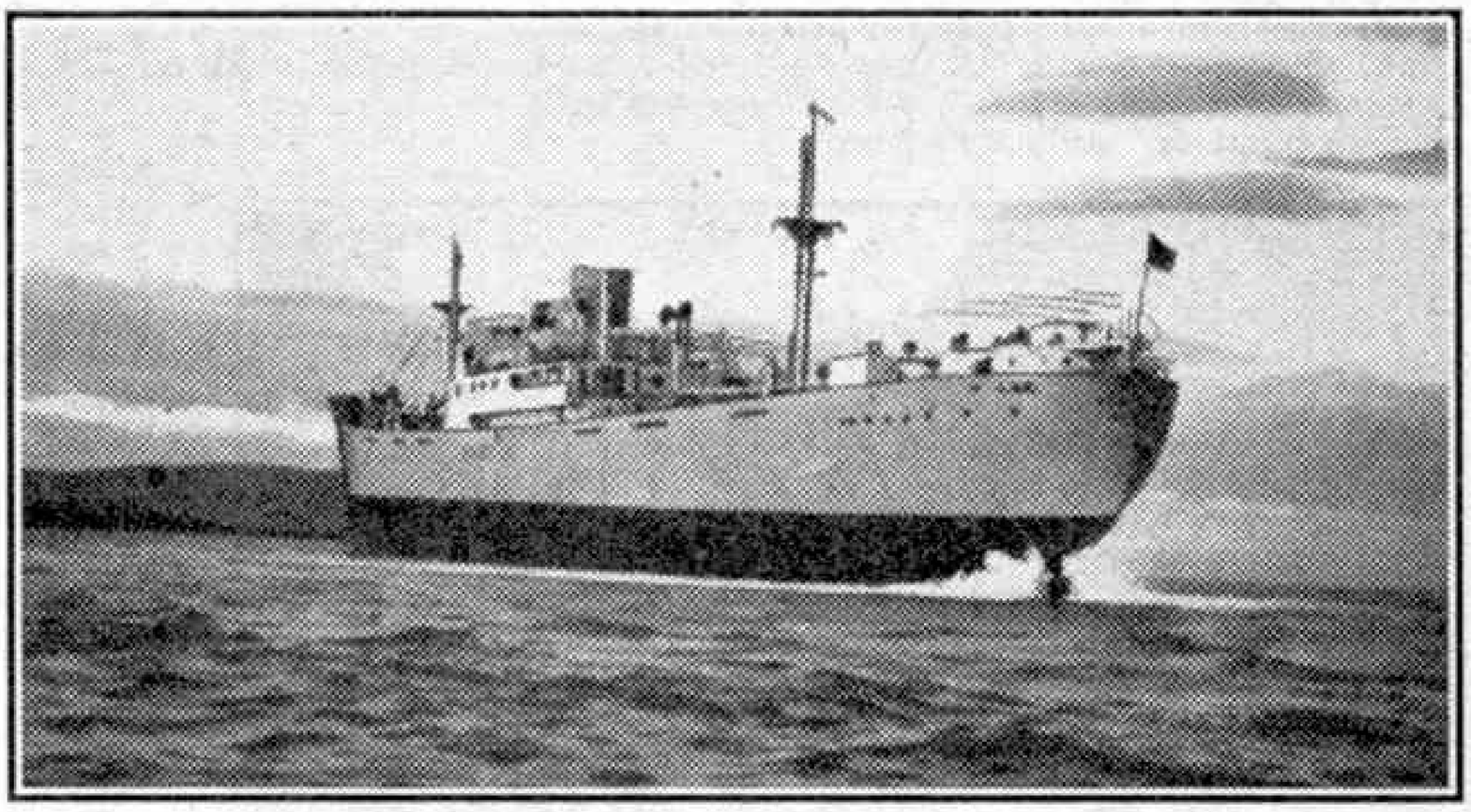
When we turn to the production of such a vast and very complex structure as a ship, we find that each unit is specially made—"hand made"—to a design that is not exactly the same as that of any other. When we think that it is upon the efficiency and safety of this great floating structure and her machinery that men's lives and fortunes depend, it becomes obvious that it is necessary to subject each one to an extensive series of tests or "trials" in conditions as similar as possible to those which the ship will experience in service later on.

Let us take the case of a passenger-cargo liner of 11,000 tons deadweight. She has been designed to carry general cargo, but provision has been made for the carriage of motor vehicles, mainly double deck buses and cars, and heavy machinery to assist colonial expansion. She can also carry a limited quantity of ore on her return voyage, and tanks have been provided for certain vegetable oils. There is accommodation for 12 passengers, and a large crew.

A "specialist" ship? Yes, but not very much more so than is usually the case. Her diesel engines developing about 5,000 b.h.p. are designed to run on boiler oil, and drive a propeller 17 ft. in diameter, giving the ship a speed of 14 knots when loaded. The length of the ship is 450 ft. on the waterline, and when full of cargo she draws 27 ft. of water.

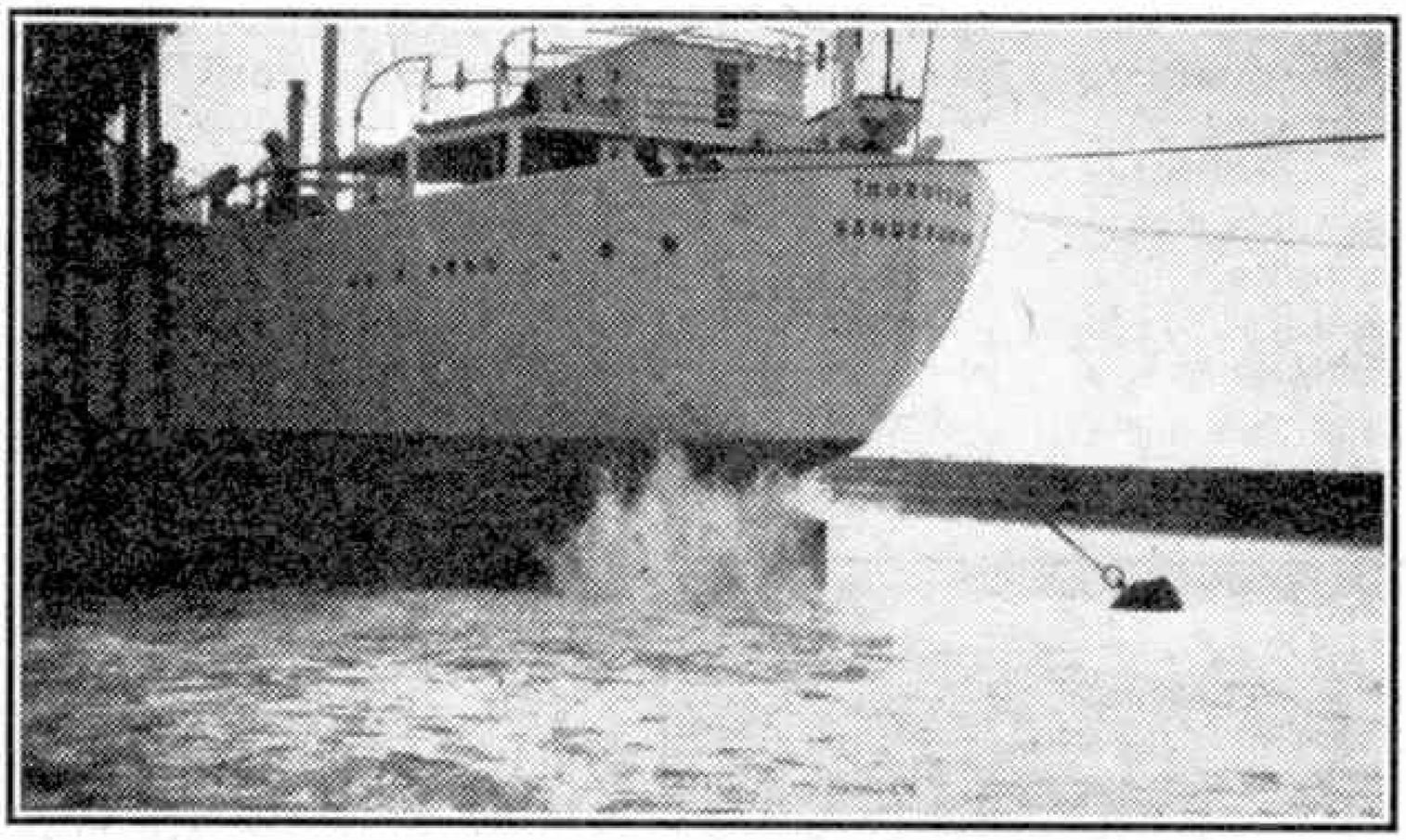
These brief particulars give an idea of our ship, which is almost ready for sea trials. A very prolonged series of tests and trials have already taken place. It is necessary to carry out as many of these as possible before the ship leaves the fitting out basin, because time and cost, especially the latter, are factors that her owners cannot afford to waste on trials at sea which could have been performed along with other work at the shipyard. Such trials include the bulk of Lloyd's tests. These include tests for water and oil tightness of decks, bulkheads, shell plating and tanks, and also inspections and tests of masts, rigging and cargo-handling machinery. Tests are also carried out to determine the ship's degree of stability. The engine room machinery, which includes the main propulsion engines, generators, pumps, compressors, and purifiers, are all tested for general efficiency before the ship leaves the shipyard.

The time eventually comes for the ship to be taken out into the estuary or sea for her "sea trials." Her owners are anxious to have an accurate idea of her



The motor ship "Elin Haven" undergoing ahead and astern tests.

speed under certain conditions, of her fuel consumption, her power, her reaction to various influences, her steering qualities and her "manner" with the sea. They are, in short, all agog to try out their new ship, to make sure that she works properly, and is likely to be a safe, efficient, and seaworthy addition to their fleet. Anchors and mooring arrangements must be tested, navigational equipment calibrated and adjusted, and a host of minor tests must be attended to before the ship may sail away to her first loading port.



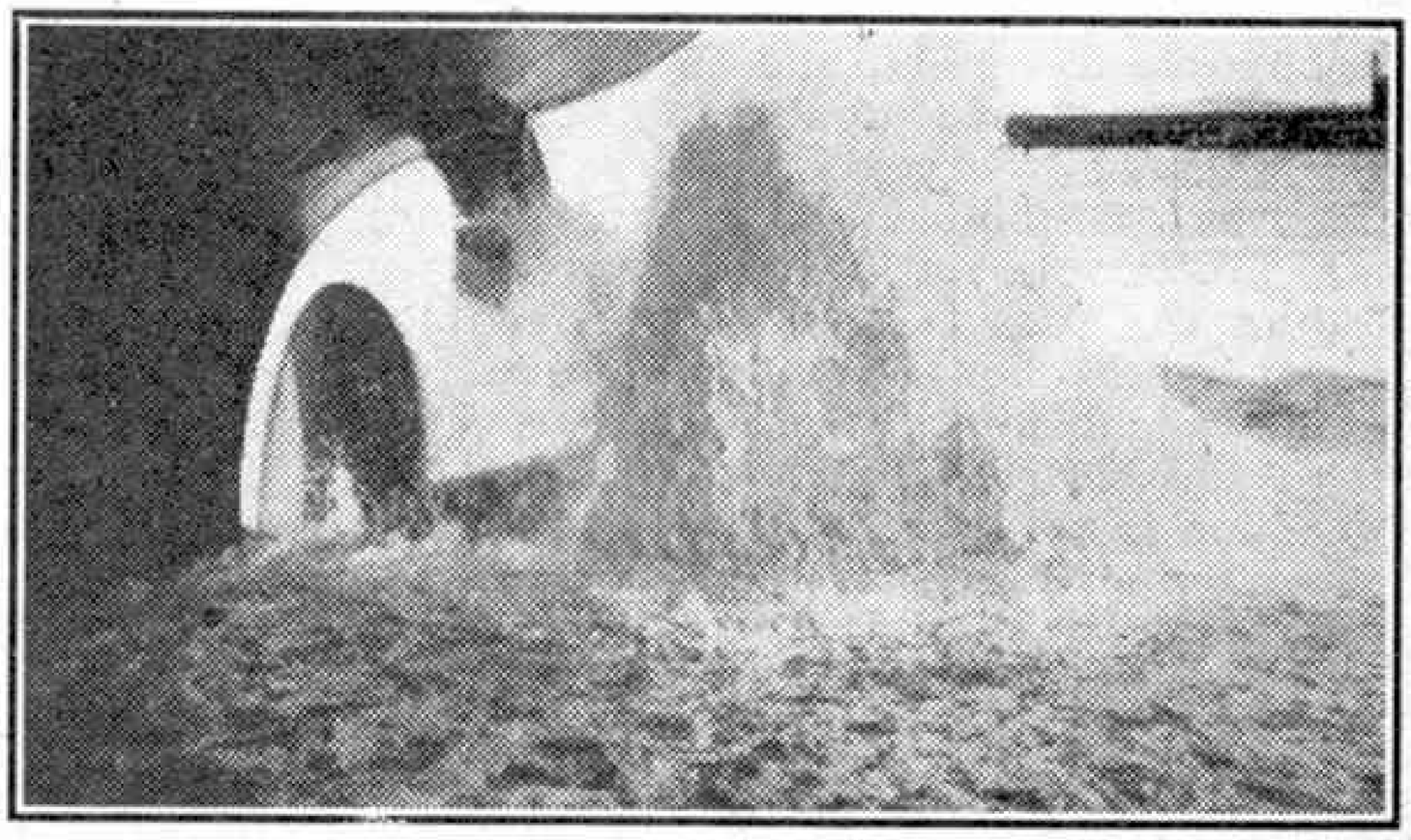
Dock trials of the motor ship "Thorsisle" in progress. Note the tension of the mooring ropes.

The trials generally cover two days. On the first day the ship is allowed to find her legs. Her machinery is not "flogged" or subjected to any severe endurance tests. Such proceedings come later. There is seldom an official party of owner's and builder's representatives on board as the occasion is not an official one, but rather a series of preliminary checks. Temperatures, pressures and times are taken, but only as an indication that everytning is in working order. The "donkey work" such as anchor and chain tests, lighting tests, mooring tests, instrument calibrating and general "making shipshape" work is done by her new crew. Cleaning and painting is to be completed, and the ship's gear made ready for instant use.

The following day brings more severe demands, and consists of "speed and power," or "acceptance" trials. The trials staff, composed of engine room staff, bridge staff, owners' and builders' directors and representatives, and a host of other personnel who are responsible for their own independent tests and records, are taken on board early in the morning. The ship weighs anchor and leaves for the measured mile. After cruising about for a short time she begins the approach to the first "run."

Two marks on the shore, generally tall white posts or towers with some kind of identification mark on top of each are lined up, about half a mile apart, one behind the other as viewed from the ship's bridge. When these posts appear as one from the ship as she travels over the mile on a definite bearing about a mile offshore, she has then commenced her first run. A second pair of posts exactly one nautical mile from the first, determines the completion of the mile, and a third pair is sometimes used when two miles are run.

When the ship comes off the mile she turns in a wide circle and "comes on to the straight" again from her return run, about 10 ship's lengths back from the commencement of the return mile. This preliminary "charge" is necessary in order to adjust the speed of the engines to the particular speed required, and also to obviate the necessity of applying an excess of helm during the run.



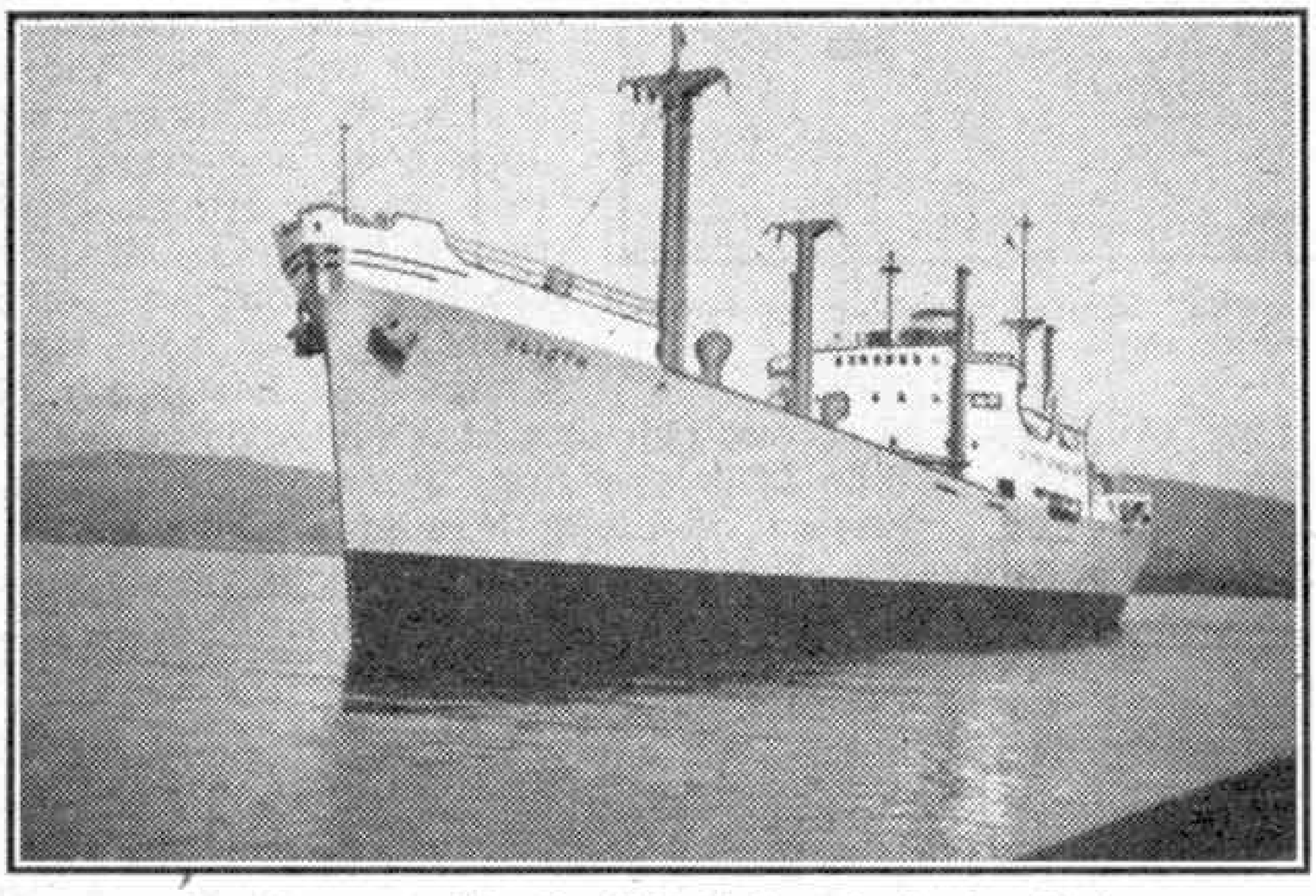
The propeller of the "Thorsisle" between "slow" and "half" speed ahead during dock trials.

In order that the engine room staff may be kept informed of proceedings it is usual to signal to them by means of a system of rings on the telegraph. One complete ring indicates that the ship is "on the straight and approaching the beginning of the next mile." Two rings signify that the vessel is passing the first pair of posts, and three indicate that the mile is complete and that minor adjustments may be made to speed if desired. The telephone may also be used, but this is sometimes undesirable as confusion is apt to arise in a motor ship due to the noise in the engine room.

Owing to the influence of tide and wind it is obviously unfair to assess the ship's speed on the merits of a single run over the mile, or even on a series of runs in the same direction. A system has therefore been evolved which gives a fair indication of what is required. This system is called the "mean of means" of a number of runs in opposite directions, and involves taking the average of each "double run," and then the average of these averages, until a fair result is obtained. If return runs are not practicable, or if conditions change during the trial to the ship's advantage or otherwise, allowance must be made.

The alignment of the posts is sighted from the bridge through binoculars, and the time taken over the mile is measured, generally to the nearest fifth of a second, by means of stop watches. The use of tables and a few simple calculations give the accurate speed of the ship relative to still water and still air, that is to say, the true speed.

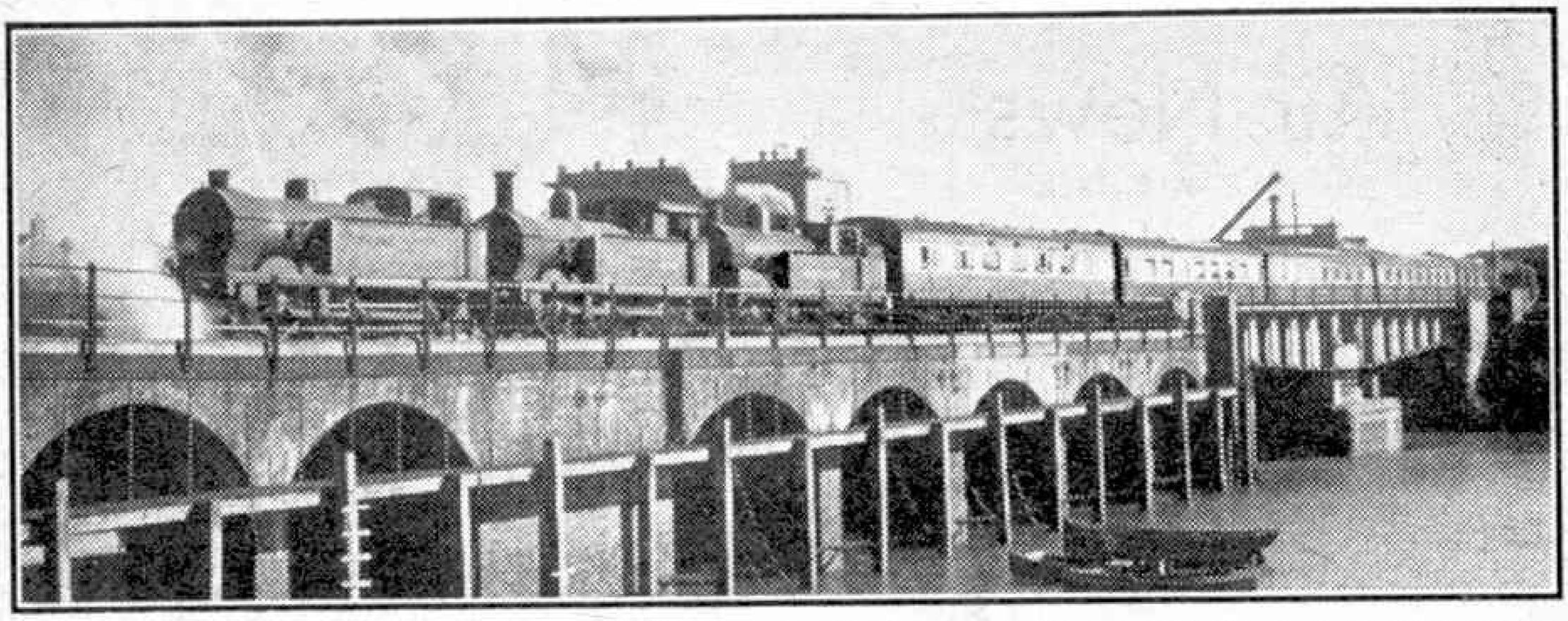
This generally completes the trials affecting the power of the ship, as far as the bridge is concerned, and while detailed tests are being carried out on the radar and other navigational equipment, let us look at what is happening in the engine room. The engineers are not vitally concerned with what speed results from a given number of propeller revolutions per minute; they are anxious to know what demands are made upon the engine to produce that number of "revs." The power of the engine is calculated by means of an "indicator." This is a complicated mechanism which is connected to the cylinders of the engine and records internal pressures at various points during each stroke. From this it is possible to calculate the power which is being developed at any given speed. In addition, it is necessary to take temperatures and pressures of fuel oil, lubricating oil, cooling water and certain other fluid commodities which are necessary to the main engine and to its auxiliaries.



Another motorship, the "Alioth," ready for her trials.

At the control platform of a large diesel engine the scene is generally a tense one. A group of men in white overalls, some of them wearing officer's caps, watch keenly a dozen or more dials and gauges above the controls, and at the ring of the telegraph, or at the arrival of a particular moment on the stop watches, one makes a quick entry in a notebook, while a second may turn to another part of the engine to inspect moving parts by peeping through inspection doors. Others are to be found along the shaft tunnel watching bearings and shafting, or recording the extent of vibration at different speeds. Every man has his own job, be it near the noise of powerful machinery in the engine room, or in the quiet eeriness of the shaft tunnel—every man watching something, entering in his notebook figures and readings which will be analysed and discussed ashore later.

Let us leave the engine room again, and witness the completion of the trial from the deck. When the measured mile runs are over, an endurance run lasting several hours has been accomplished, and reversing trials have been executed, it is sometimes necessary to enter upon a brief series of steering trials. (*Cont. on p. 238*)



Three old Southern tanks heading a heavy boat train up the incline from Folkestone Harbour. A fourth engine is assisting in rear. Photograph by J. J. Smith.

Some Old Time Southern Tank Engines

By R. A. H. Weight

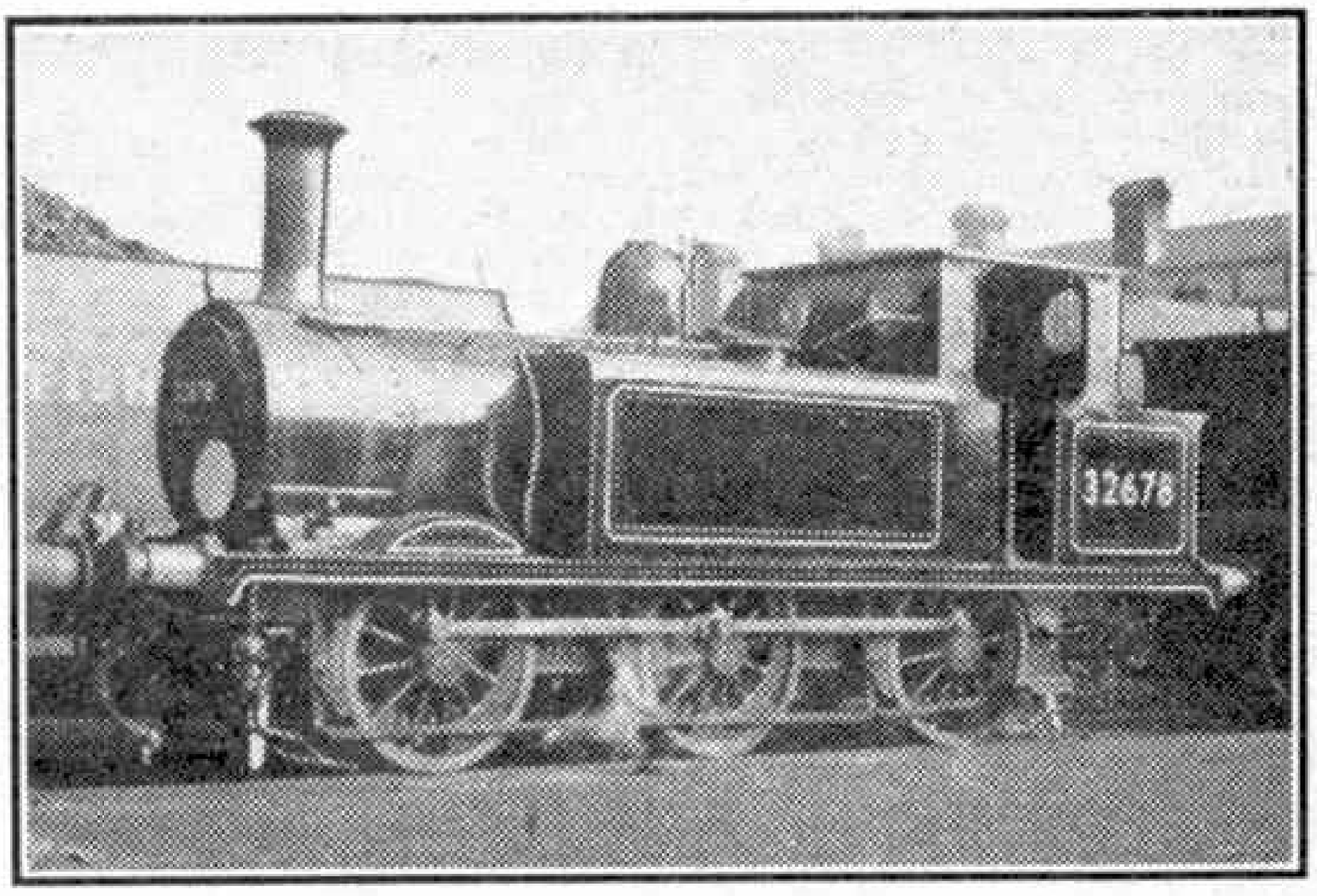
THE illustrations on this page depict some interesting varieties of tank locomotives once owned by separate railways now forming parts of the Southern Region of British Railways.

The veteran of the party, the Stroudley "Terrier" shown below, has had an unusual career. It was built in 1880 for the former London Brighton and South Coast Railway as No. 78 *"Knowle,"* belonging to the diminutive but famous "A1" 0–6–0T class used in earlier times on the South London suburban passenger services. It became No. 678 in 1910 and was renumbered W14 in 1929 when transferred by the Southern Railway to work in the Isle of Wight, receiving the name *"Bembridge."* She returned to the mainland in 1936, becoming S.R. No. 2678, but without name, shortly after.

While working on the Kent and East Sussex line after its absorption in the Southern Region in the spring of 1949, this little engine became badly derailed and was not raised from a muddy and tree-entangled ditch for more than a month. Refurbished, repainted and renumbered it is now a stand-by engine for the Kent and East Sussex line. It was used for hop pickers' specials at the weekends, based on St. Leonards shed, during September last. In its present form it is classed "A1X."

The Folkestone Harbour branch has a fearsome gradient of 1 in 30 up which heavy boat trains have to be dragged and propelled. There is, too, a severe weight restriction for engines, and the triple-headed, newly painted express shown in one of our pictures displays an even greater variety of engine power than usual. The leading engine is No. 1147, with short chimney and mountings cut down for use on the Canterbury-Whitstable branch. The second, B.R. No. 31340, represents the usual rebuilt condition of the same 60 year-old "R1" Stirling 0–6–0T type of South Eastern origin.

The third is No. 1708, an 0–4–4T of the former London Chatham and Dover Railway design.



A veteran "Terrier" 0–6–0T that has had a varied career, as related on this page. Photograph by D. L. Bradley.

Air News

By John W. R. Taylor

Transatlantic "Canberra"

Some idea of the capabilities of Britain's first jet bomber was given on 21st February last when a standard production English Electric "Canberra" Mk. 2, with an R.A.F. crew, flew the Atlantic non-stop from Aldergrove, Northern Ireland, to Gander, Newfoundland, in 4 hr. 40 min.

The "Canberra" was on its way to the great U.S.A.F. aircraft test centre at Wright Patterson Air Force Base near Dayton, Ohio, to be flown by American pilots in competition with the latest U.S. tactical jet bombers. As expected, it outflew the lot, and within six days the U.S.A.F. had ordered a substantial number of "Canberras," which will be built by the Glenn L. Martin Company. The "Canberra" is thus the first modern British aeroplane chosen for production in the United States.

New Basic Trainer

The Royal Air Force has ordered a new two-seat basic trainer, the Percival P.56, to replace its present Percival "Prentices."

Two versions of the P.56 have been built, the Mark I fitted with a 420 h.p. Armstrong Siddeley "Cheetah" 17 engine, and the Mark II with a 550 h.p. Alvis "Leonides." Both versions are all-metal, side-by-side two-seaters, with fixed tail-wheel undercarriage. Complete radio and night flying equipment is provided, and the aircraft are fully aerobatic. The Mk. II version is intended to be the standard R.A.F. trainer.

Airborne Cannery

Fruit canners at Alexandria, near Sydney, Australia, were faced with a serious problem when temperatures of 100 deg., following 10 days of rain, ripened this season's apricot crop before they had had time to instal canning machinery to cope with it.

In response to an urgent telephone call employees of the machinery manufacturers, D. W. Bingham and Co., worked long hours of overtime to complete the 5-ton canning plant. It was then rushed to Melbourne Airport and handed over to Australian National Airways, who flew it in a single load to Sydney in a Bristol "Freighter." The machinery was delivered at midnight to the cannery, where engineers were waiting to go ahead immediately with the work of installing it. Early next morning the first consignments of fruit were being handled.

Navy Helicopter Trials

The Royal Navy recently completed a series of trials to investigate the possibility of operating helicopters from merchant ships in all weathers. Westland-Sikorsky S-51 "Dragonfly" helicopters were used for the experiments, which were made from a small platform fitted on the stern of the 9,788-ton fleet supply ship "*Fort Duquesne*." No statement was issued afterwards, but the Admiralty admitted that they were considering using helicopters on a large scale for anti-submarine work, air-sea rescue, communication between ships, and for a variety of other duties.

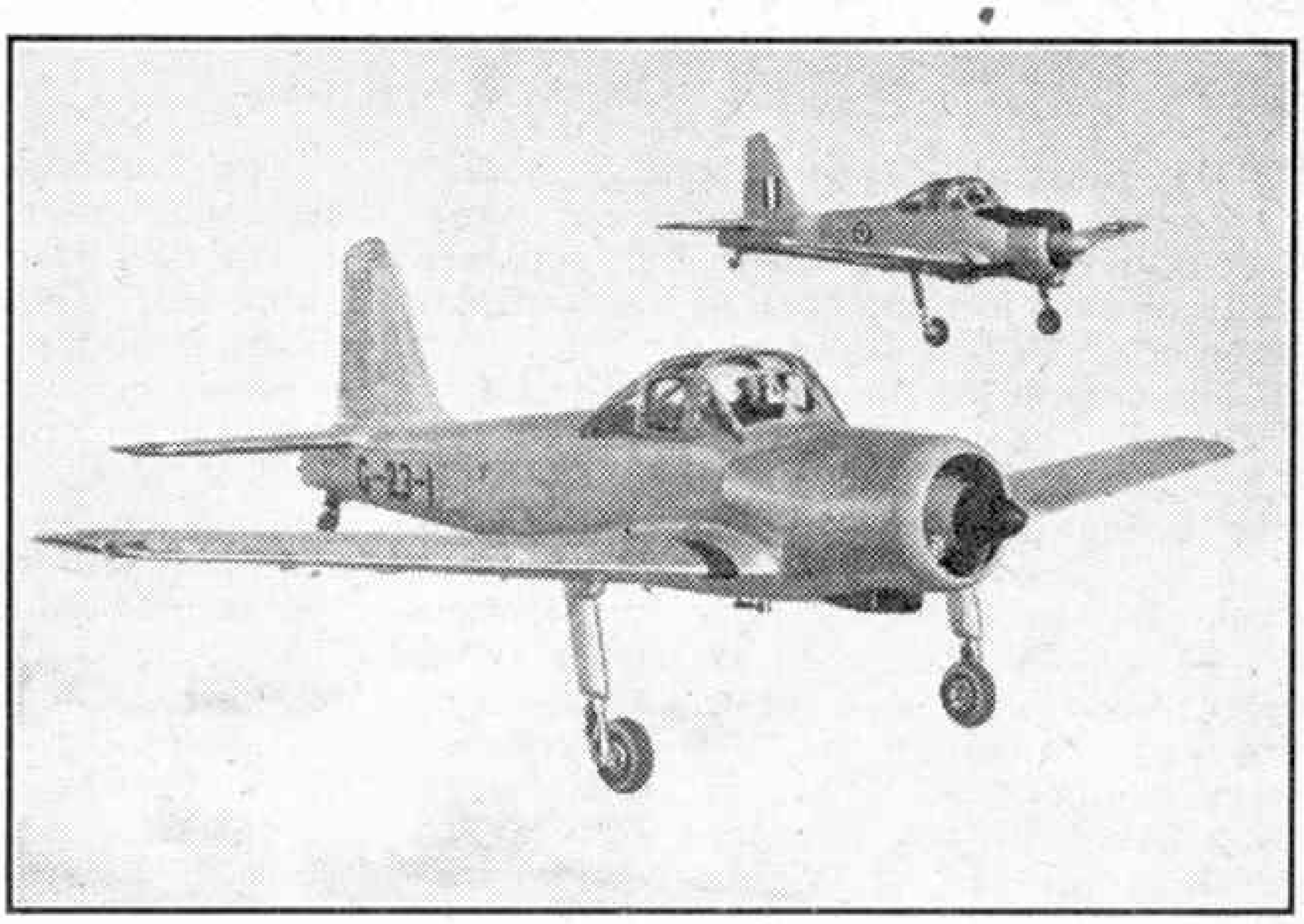
"Viscounts" for Aer Lingus

The popular and efficient Irish air line, Aer Lingus, announced recently that it plans to order a number of Vickers "Viscounts" to replace its present fleet of 13 "Dakotas." The last-mentioned machines will be busier than ever this Summer, as Aer Lingus intend to operate 100 flights weekly between Dublin and London at the peak of the season. Many of them will be cheap-fare "Starflight" late-night services. In addition, Aer Lingus will introduce a new service between Dublin and Bristol on the 3rd May.

"Thunderjets" for Western Union

The French Air Force has received its first batch of Republic F-84E "Thunderjet" fighters, promised as part of America's contribution to Western Union defences. By the end of the year France plans to have six "Thunderjet" squadrons in service.

The Royal Netherlands Army Air Force too will re-equip some of its squadrons with "Thunderjets" this year. They will be intended mainly for service as tactical fighter-bombers, to give close support to Dutch Army units. "Meteor" 8s, built in Holland by the Fokker Company, will remain standard equipment in Netherlands Air Force interceptor squadrons.



The two versions of the Percival P.56 trainer. The one in the foreground, with 550 h.p. Alvis "Leonides" engine, is the version intended for the new R.A.F. standard trainer. Photograph by courtesy of Percival Aircraft Ltd.

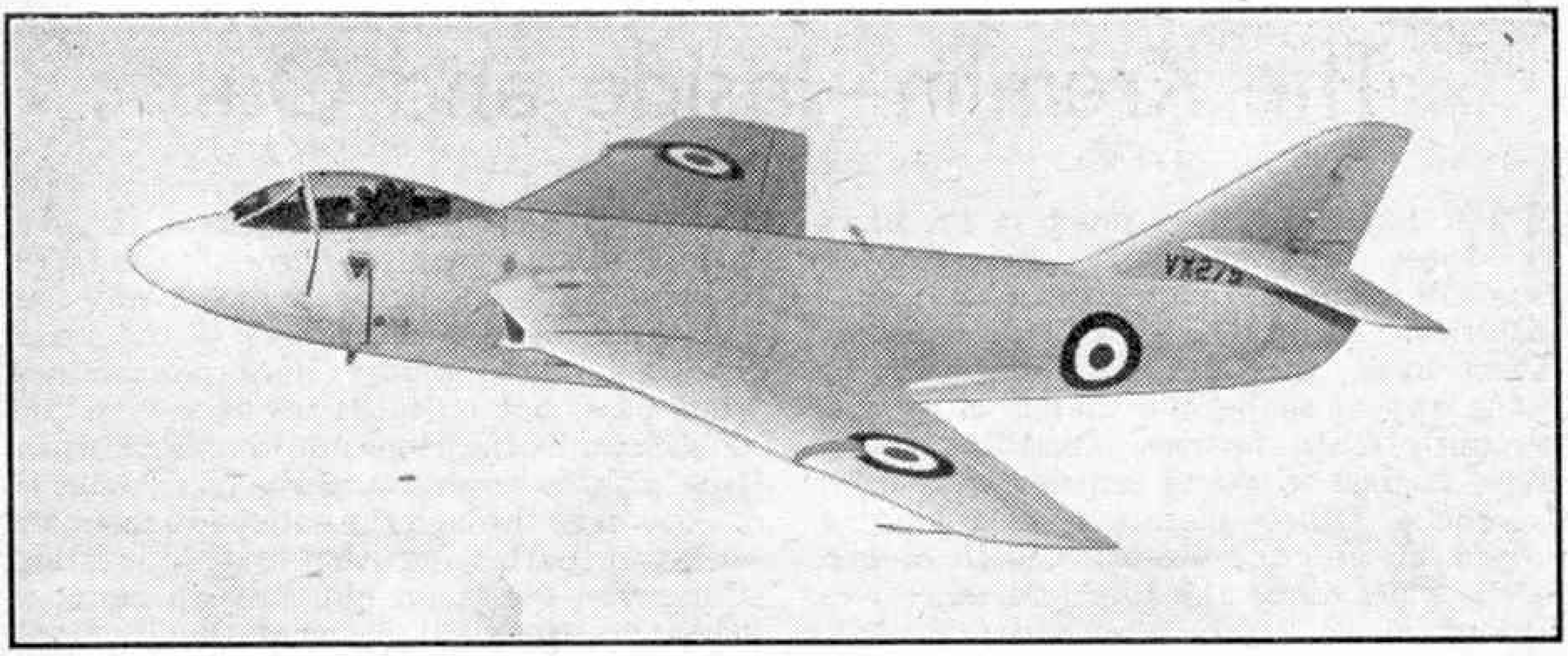
Meanwhile the "Sapphire"-powered F-84F sweptwing "Thunderjet" has completed initial test flights in America. The extra 2,000 lb. thrust of this British engine, compared with the 5,200 lb. Allison J-35 fitted to earlier "Thunderjets," should considerably enhance performance. "Sapphires" are being built in America by Curtiss-Wright and the Buick Division of General Motors.

* * * *

The United States Navy has ordered a new version of the North American F-86D "Sabre," with folding wings, for operation from its carriers. Designated FJ-2, it may be the first sweptwing fighter to become operational aboard ship.

* * * *

Small air-to-air rocket projectiles, specially designed to destroy fast, high-flying jet 'planes, are among the latest weapons carried by U.S. Air Force and Navy fighter aircraft.



Hawker P.1081 jet fighter, with airflow fences fitted to the leading edges of the wings. Photograph by courtesy of Hawker Aircraft Ltd.

Wing Fences

The latest photograph of the superb Hawker P.1081 jet fighter, reproduced above, shows that it has now been fitted with boundary layer fences on the leading edges of its sweptback wings. These fences consist of vertical metal plates, so placed that they restrict the flow of air which, on sweptwing aircraft, moves along the edge of the wing and out towards the tips, causing a wing-tip stall effect. Such stalls can be highly dangerous during landings or high-speed manœuvres, when they cause a temporary loss of control.

Other aircraft now fitted with wing fences include the "Comet," "Venom," Fairey 17 and the Russian MIG–15 jet fighter.

An 8-Seat Helicopter

The Bell YH–12B military helicopter, shown on this page, is virtually a scaled-up version of the well-known Bell 47, and uses the same type of rotor system, with two-bladed main and tail rotors. Three XH–12 prototypes and 11 YH–12Bs have been built so far for the U.S.A.F., who are testing their suitability for a variety of duties, including casualty clearance, cargo transport, reconnaissance, liaison, co-operation with ground forces and artillery observation.

The YH–12B is powered by a 550 h.p. Pratt and Whitney "Wasp" engine, which gives it a top speed of 105 m.p.h. and range of 300 miles at 90 m.p.h. It can be fitted with flotation gear for operation from water, a rescue hatch and hoist, Army canvas litters or Naval Stokes litters and life rafts. Normal accommodation is for two pilots and three passengers, or one pilot, six stretcher patients and an attendant.

The Bell YH-12B military helicopter referred to on this page. Photograph by courtesy of Bell Aircraft Corporation, U.S.A.

Veteran Crop-Sprayers

During the war the "Perseus"-engined Westland "Lysander" was a favourite with aircraft "spotters," even the least experienced of whom could hardly fail to recognise its unique layout. It was less of a favourite with the Germans, as, apart from its service as an army co-operation machine in Europe and the Middle East, it was used extensively for carrying British agents and French Resistance leaders to and from the Continent.

The end of the war seemed to mark the end of the "Lysander" story, but news has now come from Canada that four "Lizzies," bought as war surplus by a small Canadian company named Westland Spraying Service, were fitted with spray-booms under their wings in 1946 and have been at work ever since.

The aircraft work across Canada from the west coast, accompanied by a ground party with a lorry, car and caravan. Each day's work is arranged by an agent, travelling ahead of the main party, and the aircraft operate from the farms on which crop-spraying is to be carried out, independently of airfields. Spraying is normally done at a speed of 140 m.p.h. and a height of 8 ft. above the ground. Any field of 100 acres or more is suitable for spraying, and one "Lysander" can cover 300 acres in 30 minutes.

Roof Landing

Rooftop landings by helicopter pilots are no longer regarded as novel, but a similar exploit by the pilot of an R.A.F. "Auster" a few months ago hit the headlines with a bang, because the roof on which he landed was the top of a German 'bus full of people!

Apparently he ran out of petrol and chose a wide *autobahn* as the best emergency landing ground. He hoped to land ahead of the 'bus, but the "Auster's" engine cut at just the wrong moment and he landed on the 'bus roof, before dropping on to the road. Fortunately, nobody was hurt.

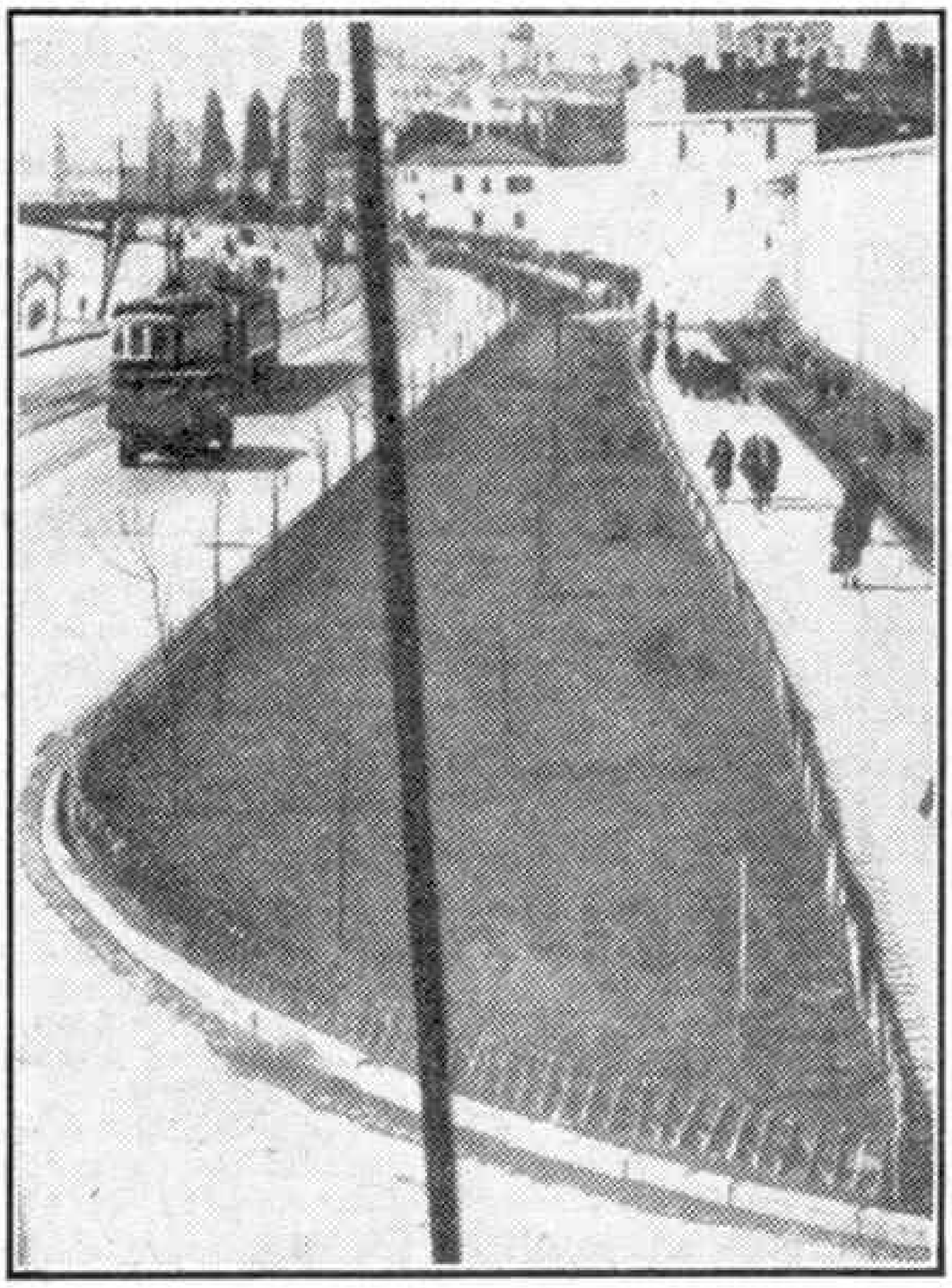
The Kremlin—Inside and Out

By Eric N. Simons

THE Kremlin is very much in the news these days, and it is interesting to hear different people's views on that historical Russian seat of government. They have the quaintest ideas of it. Some appear to believe that it is a vast, armour-plated fortress, bristling with guns, barbed wire and sentries with fixed bayonets. Others picture it as a kind of prison, all grey granite walls, with broken bottle glass along the top, and detectives lurking in all its shadows and doorways. Others, again, imagine it as a somewhat more formidable-looking House of Parliament.

Actually it is not a bit like any of those. I happen to have been inside it—not a very common distinction, if one can call it that. First of all, if it resembles anything at all in this country, it is the Tower of London. It is located in the centre of Moscow and stands on a slight eminence, with the Moscow River running near by. Its total area is about a hundred acres, and it is enclosed by a lofty battlemented wall of stone, one side of which runs along the celebrated Red Square.

It was originally an old fort on a hill



The Moscow River front of the Kremlin.

130 ft. in height. To-day, there are five gates, surmounted by towers, and 19 towers in all are to be found there. As you go in by way of an arch in the stone wall, a sentry in military uniform examines your pass, but no more severely than the policeman at the House of Commons when you wish to enter the Strangers' Gallery.

As you go through the gate you encounter a broad path, and the first interesting thing you see is an old Russian cannon. Then, on the right, is what the Russians call "the king of the bells." This is a huge bell, standing up against the side of a building and dwarfing anyone who goes near it. It measures 65 ft. in circumference round the rim, is 19 ft. in height, and weighs more than 198 tons. It is over 200 years old, but unfortunately it is cracked and useless, and was never hung. Before the hanging ceremony could take place there was a fire, which cracked the bell and made it unusable.

The Kremlin is first and foremost a collection of ancient cathedrals, tombs, churches, convents, monasteries, campaniles and palaces. In the chapel of the Czars, what impressed me most was that the bearded old man who looked after it and showed it off to visitors reprimanded us for taking off our hats, and made emphatic motions to indicate that we should put them on again. There was nothing whatever to revere in this once holy place, he declared. They had done away with all that superstitious nonsense. However, we took no notice of him, but obstinately kept our hats in our hands.

There are some magnificent historical things in the many museums. I saw there an eagle carved in ivory, the head being solid. What made it remarkable was that every feather of its plumage had been separately carved and cemented into place, a miracle of delicate, conscientious craftsmanship from Japan. This wonderful bird stood on a huge tree stump, and had been presented by the Mikado of Japan to the Czar.

Elsewhere were the old state coaches and sleighs that had formerly conveyed Ivan the Terrible and Peter the Great, Czars of Russia, on their long journeys through the snow or along the primitive roads of Muscovy. But what interested me most were the Government offices,

which are found near the main gate of the Kremlin. They are in a more recent style, and it would have been most interesting to have a glimpse of the Soviet Government at work. Unfortunately, our guide took no notice of gentle hints to this effect. They were far too busy in there making a better world, he hinted, to be bothered by a bevy of foreign capitalists.

Another most beautiful and interesting building is the 500-years-old state banqueting hall, which is a single-vaulted apartment in a wing of the great palace of the Czars. This old hall is now used for the Congress of the Soviets, when delegates from all over the U.S.S.R. foregather in Moscow to confer and discuss what they wish their government to do for them during the forthcoming twelve months.

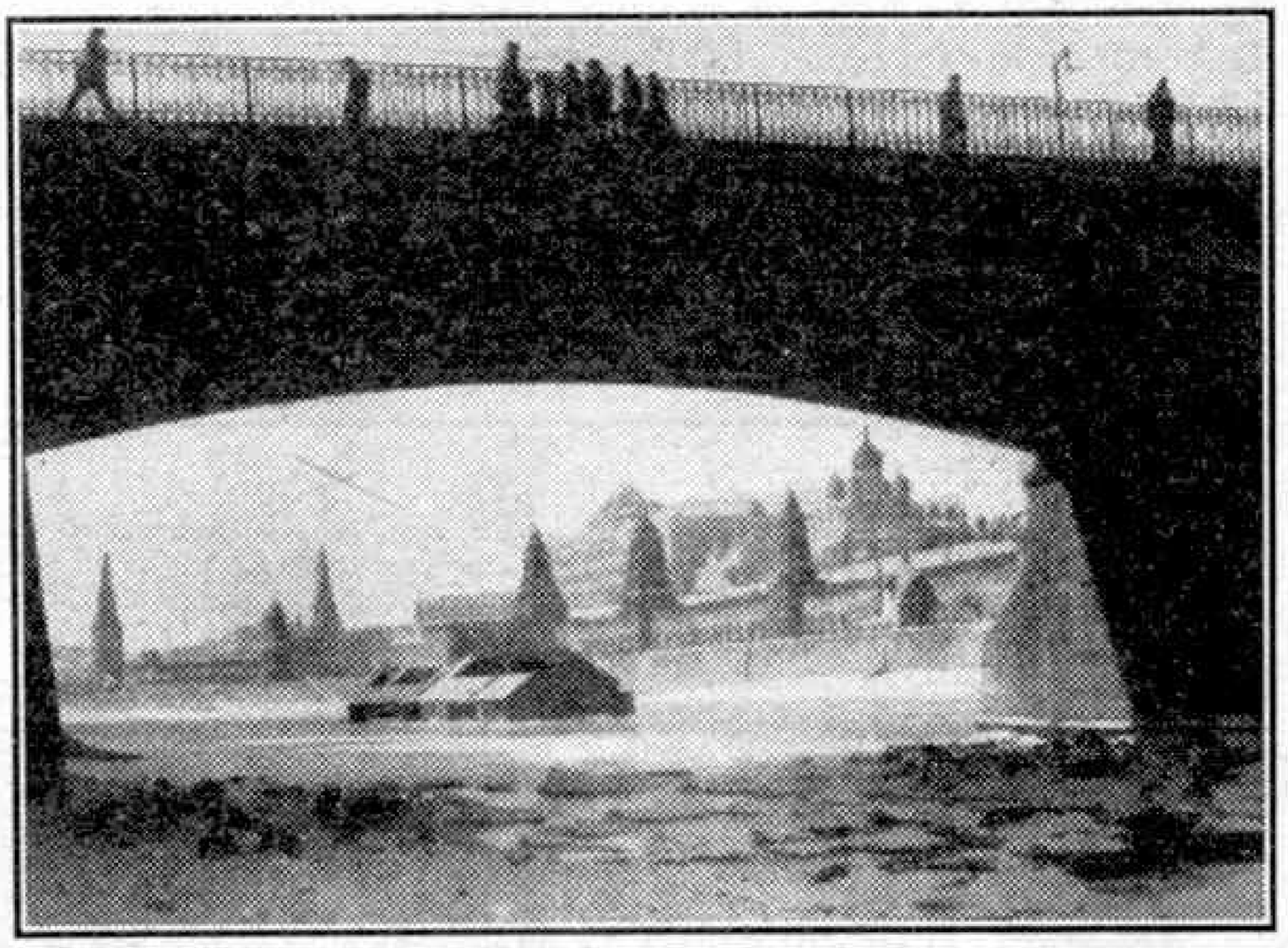
Another interesting feature of the Kremlin is the library, which possesses 500 Greek and 1,000 extremely rare Russian manuscripts, including a Gospel of the 8th century.

Coming out of the Kremlin into the Red Square, the most vivid impression one has is of the tomb of Lenin. When I was there it was a wooden construction, but now it has been rebuilt in stone. The tomb is open from 5 p.m. to 6 p.m., and every day there are large queues at this hour.

Entering the tomb, past the usual sentry, who examines one's pass, one goes down a short flight of steps, and comes into a chamber lighted by electricity. In the centre of this is a glass case, containing the body of Lenin, which has been embalmed. A strong iron rail runs round it, making a rectangle, and prevents one from getting nearer to the case than a few feet, but one can walk right round it. At intervals of a couple of yards soldiers are stationed to guard the body.

He lies with eyes closed, a small man with a reddish beard and moustache, of a colour lighter than one would have imagined from the pictures of him one sees, and almost entirely bald. His head and arms are alone exposed, the remainder of his body being covered by a red coverlet. He has a curious waxen look, like an effigy rather than a dead man.

As one moves slowly round that solitary figure, it is difficult to conceive what it was about him that shook the whole Russian empire down to its foundations, and created a new colossus whose shadow lies to-day across the world. I had lunch one day, several years afterwards, with the late H. G. Wells, and took the



Another view of the Kremlin, seen through the arch of one of the bridges over the river.

opportunity of asking him what he thought of Lenin, with whom he had an interview in 1920. He leaned forward across the table, and said in an emphatic, impressive way: "A clever little second-rater!" We know from Trotsky that Lenin himself described Wells as a clever little typical bourgeois, or words to that effect. It would be interesting to know what our descendants a hundred years hence will think of the relative greatness of these two great men.

At the other end of the Red Square is an old church or cathedral having those brilliantly coloured onion-shaped domes so characteristic of old Russia. It has been turned into a Museum. Down by the side of it runs a road leading to the Moscow River, which was frozen over when I was there. It was curious to see horse and cart go down the river bank below to the frozen water and wait while men cut out great blocks of ice, and loaded them up for transport. Across the river could be seen a huge new power station, and here and there a forest of scaffold poles, where new blocks of workers' flats were being erected.

The Red Square was originally the forum, market place (*Continued on page 238*)

A Diesel Engine Instruction Van

Mobile School for Overseas Demonstration

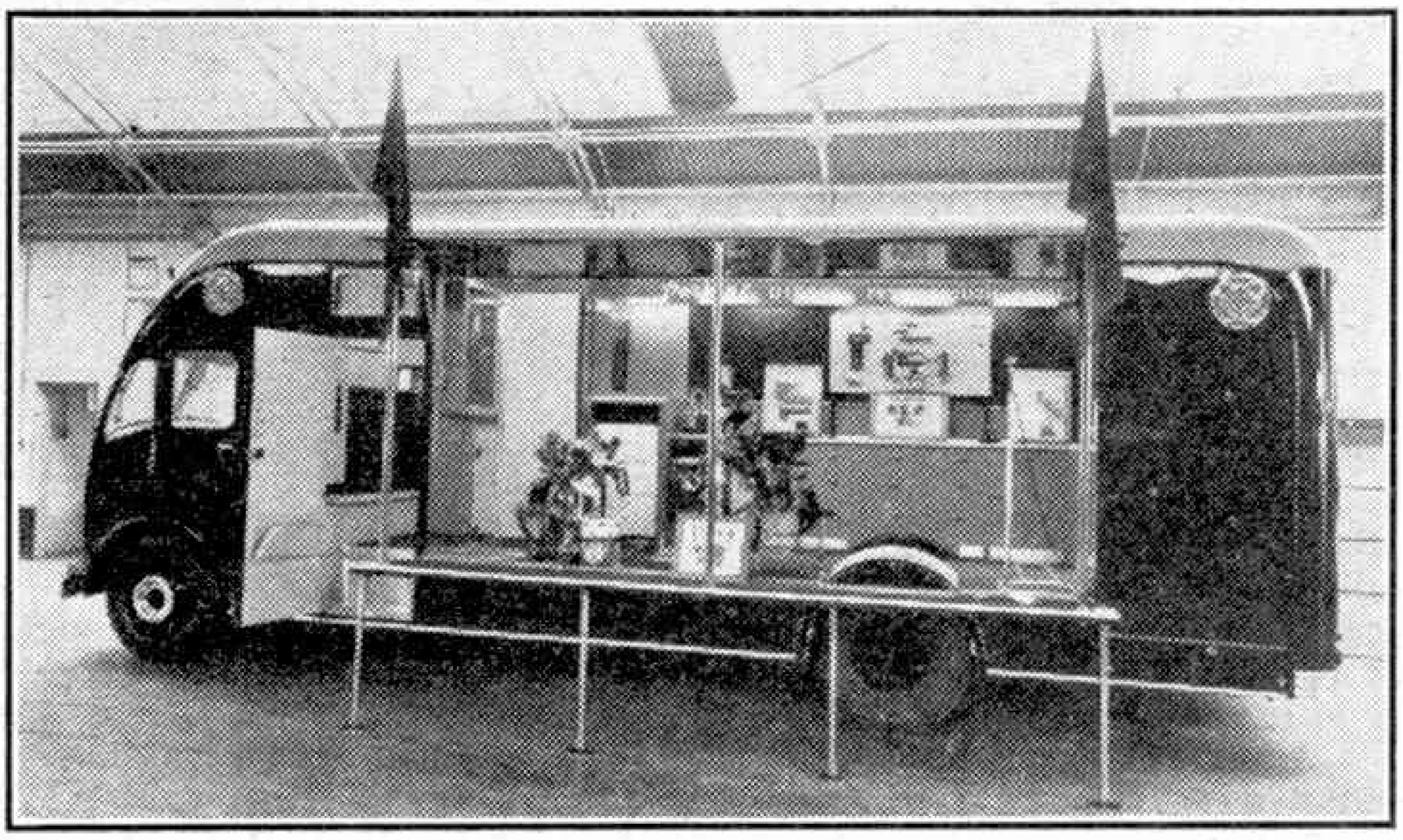
By D. G. Fifer

DURING my travels through Peterborough I came across an outstanding example of British enterprise. In order to increase their exports and make known their famous diesel engines, F. Perkins Ltd., of Peterborough, have had built a fleet of mobile schools that will travel thousands of miles in many different countries.

This firm, which to-day produces more diesel engines within its range of horse power than the whole of the American diesel engine industry, was started only 17 years ago in a small back street workshop. It was hardly a good time to choose for launching a new engine manufacturing enterprise. The great slump was on, and in Peterborough alone 3,000 men were out of work. But the excellence of the product, backed by the skill and enthusiasm of the men who designed and built it, made the venture a success, and now a few square yards of workshop have grown to six acres of buildings, standing in 81 acres of the company's own land.

Very early in their life the company established connections in the main overseas markets, and by the beginning of the late war the Perkins engine had made its presence felt. At the end of the war a determined attack was made on overseas markets, but a start had to be made from scratch. In 1945 a mere 20 per cent. of the company's output went overseas, but now 85 per cent. of the total output is exported, the engines finding their way into 76 different countries.

The direct contact with overseas buyers and overseas conditions continued to increase in importance, and in 1950, when engine production for the year was nearing the 25,000 mark, it was decided that a fleet of mobile schools would increase the company's prestige in overseas countries in addition to facilitating export service. Accordingly, Seddon Motors Ltd., of Oldham, Lancs., were given an order for five mobile schools. The first, which was completed in early September, was shipped to Canada almost immediately, and it has already visited many of the big Canadian towns. Other schools will be sent to Australia, India and South America, and the fifth will be used in the British Isles and on the Continent. The first Continental countries that the school will visit are Turkey and Greece. Before No. 1 school left for Canada it was on show at the 1950 Commercial Motor Transport Exhibition at Earls Court.

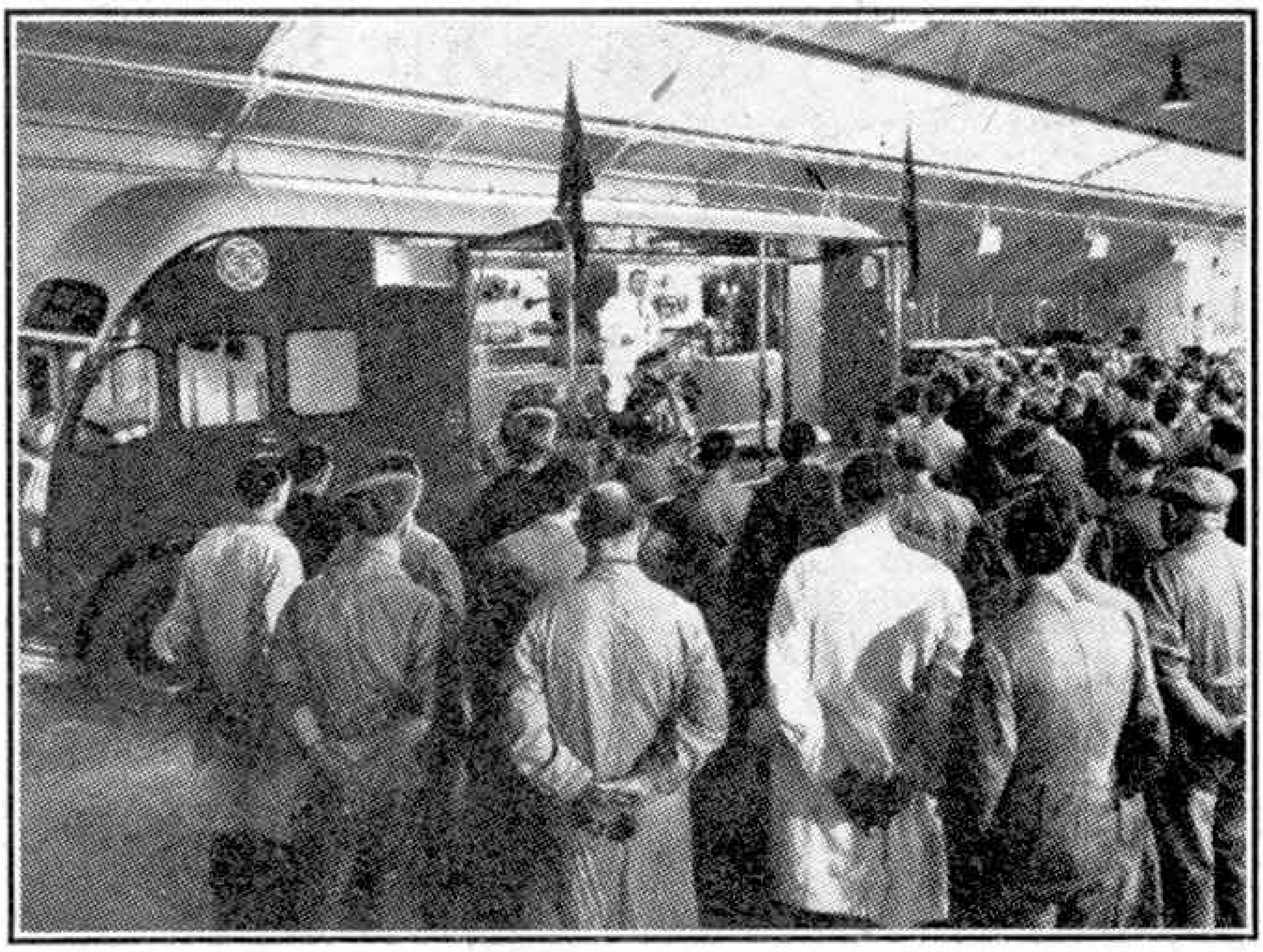


[The [Perkins diesel mobile school open and ready for instruction. The illustrations to this article are reproduced by courtesy of F. Perkins Ltd., Peterborough.

The basis of the mobile school is a long wheelbase Seddon passenger chassis fitted with a Perkins P6V Diesel Engine. The superstructure, a fine example of the coach-builder's art, was built to the design of F. Perkins Ltd. so that the near side of the body opens to form a platform from which instruction can be given to an audience of up to 400. Inside

the school are two sectionalised Perkins engines, one a P6TA (Tractor Type) and the other a P6V (Vehicle Type). These are pivotally mounted on the main floor, and can be swung outward to facilitate instruction.

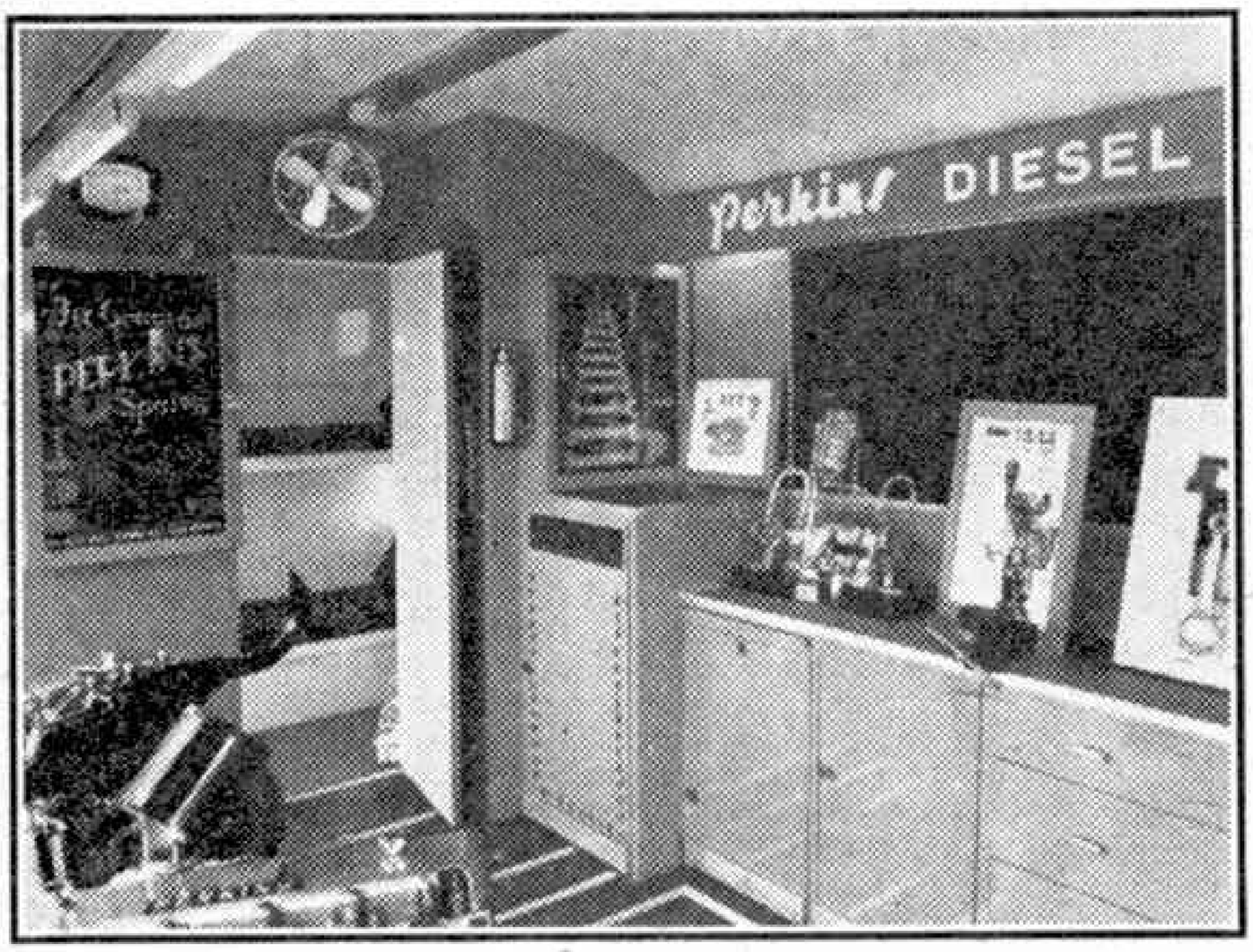
An interesting item of equipment is the combined radio, recording and auto-change gramophone, which is coupled to loudspeakers situated at each end of the vehicle that have a range of 200 yards. The radio proved particularly useful in Canada last winter, when broadcasts of road blockages enabled the school's crew to alter its route and thereby avoid holdups. The recording apparatus utilises a strip of paper long enough to give a 35 min. recording. Messages from the Directors of F. Perkins Ltd. can be recorded in Peterborough and airmailed out to the schools, where they are played at demonstrations.



A group of diesel engine fitters receiving instruction on the care and maintenance of the Perkins diesel engine.

Mounted in glass cases at the front of the workshop section of the school are the essential tools needed for dismantling a Perkins engine, and also a set of Perkins genuine spare parts. Atomiser testing equipment and sectionalised injection equipment together with instruction diagrams are included in the exhibits.

At the rear of the school is a single cylinder 3 kW. diesel generating set to provide current for a set of 110v. storage batteries, which are capable of supplying the lighting and other electrical requirements for 11 hours without re-charging. The main fluorescent lighting tubes can be switched off at night, when a supplementary set of lights is available from the 12v. vehicle battery.



An interior view of the Perkins school, showing some of the sectionalised equipment, spare parts and all the tools necessary for servicing the engine.

The front of the vehicle was designed by the Service Department of F. Perkins Ltd. It is very striking, and will be used for all future Seddon Coaches. The driver's cab is in show finish and the seats are upholstered in moquette. Behind the cab are living quarters, containing sleeping accommodation for the crew of two, a built-in wash basin, wardrobe, literature cupboard, linen cupboard and a folding writing table. The vehicle is finished in Perkins maroon with white lettering, and is heated by Calor gas.

From Our Readers

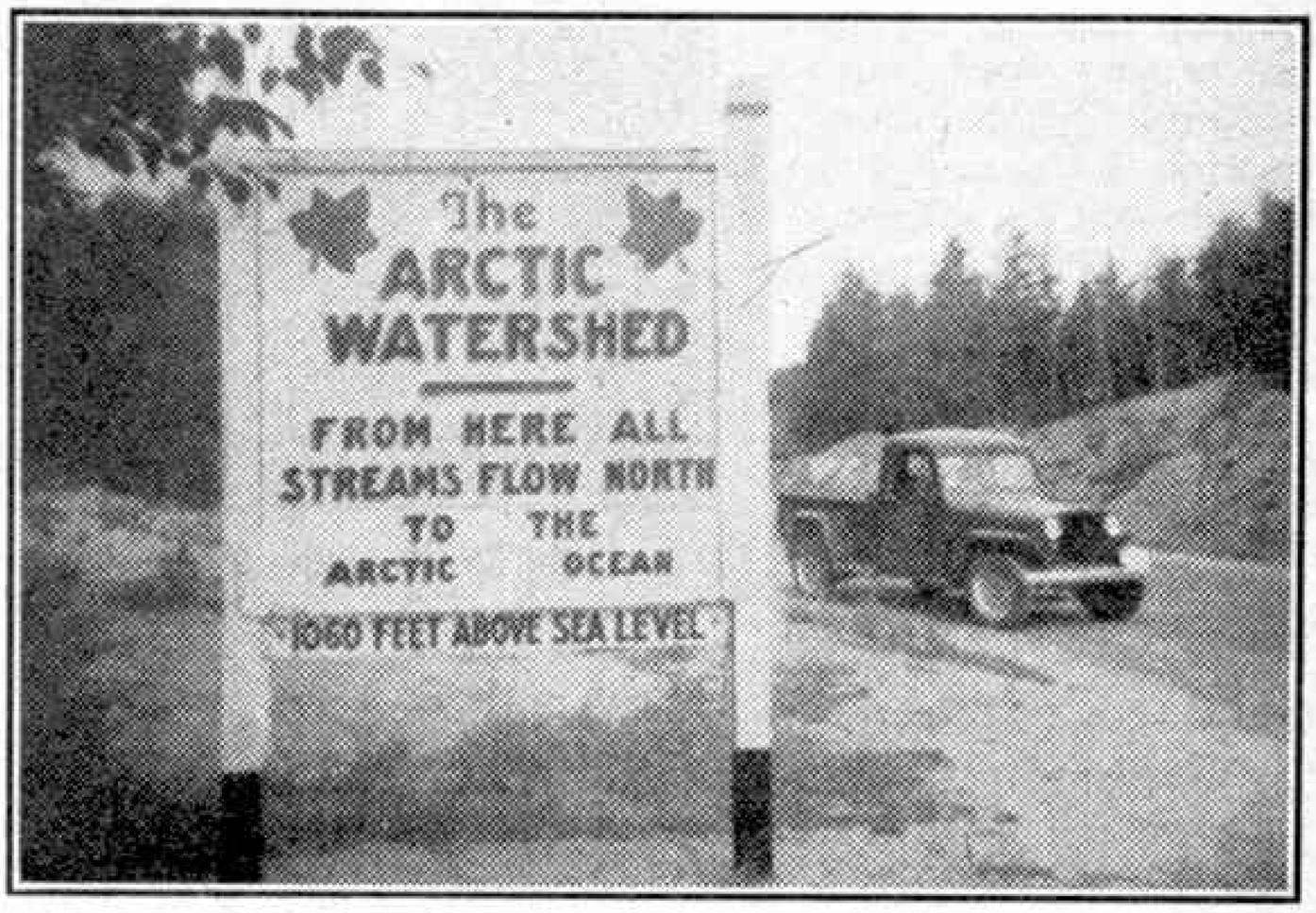
This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

A NEW CANADIAN ASBESTOS CENTRE

Usually northern Ontario is associated with the production of minerals, such as gold, cobalt and copper. Asbestos too has recently been found in abundance, the quantity exceeding that of the world-famous asbestos mines in the province of Quebec. This discovery centres round the little bush town of Matheson, which is just north of where the accompanying photograph was taken, and is situated between the famous gold mining towns of Kirkland Lake and Timmins.

Matheson struck me as being of the type of the pioneer towns of the last century, with old square wooden structures that made me half expect to see some old time saloon, but there was no place of that kind. It will be a few years before asbestos production there is at a high peak, owing to the climate. This is very severe during seven months of the year, with temperatures often reaching 40 to 60 deg. F. below zero.

It is also interesting to know that Matheson is north of the Height of Land, the ridge beyond which the rivers run north instead of south. This dividing line is shown in the illustration. North of it are what we call the Barrens, where nothing grows except moss. J. WARLUND (Montreal).

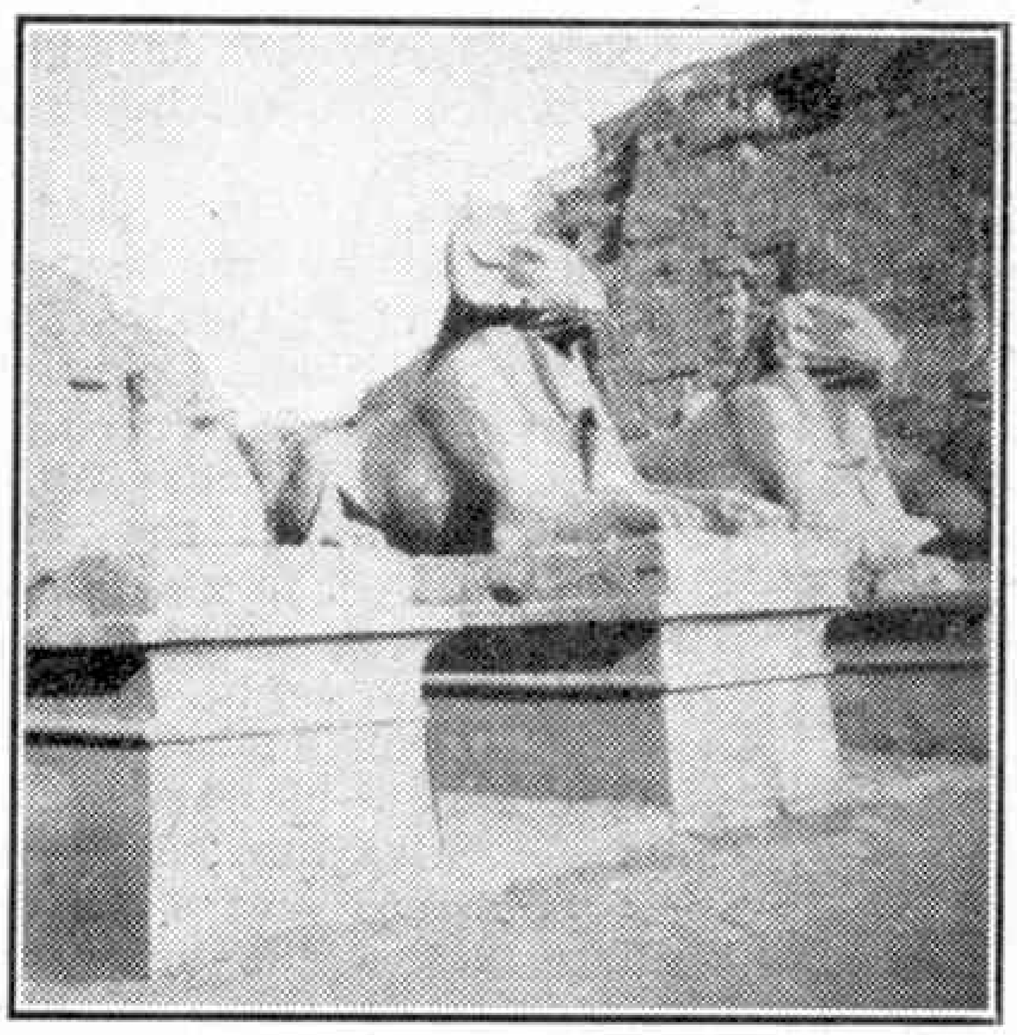


An Arctic watershed in Northern Ontario. North of it rivers flow to Hudson Bay, and to the south the waters find their way into the St. Lawrence. Photograph by J. Warlund, Montreal.

A HOLIDAY AT LUXOR

Recently I spent a holiday at Luxor, over 400 miles up the Nile on the site of Thebes, the capital of Egypt about 3,000 years ago. I was impressed by the ruined temples at Luxor and Karnak, containing massive columns with lotus and papyrus capitals and wonderful carving, some still coloured. At Karnak I saw an obelisk companion of Cleopatra's Needle, now in London, set up here by Queen Hatshepsut 4,500 years ago. I also inspected part of the Avenue of Ram-headed Sphinxes seen in the lower illustration on this page, and watched excavations in progress 50 ft. below ground level.

The Valley of the Tombs of the Kings on the opposite side of the Nile seemed most awe-inspiring, with great towering cliffs looming up on both sides of the track. No wonder so many of the Kings were buried here, shut away from the rest of the world in their deep tombs. Most of these were robbed of the treasures buried with the Kings for their use in after life, so the discovery in 1922 of the tomb of Tutankhamen caused a sensation as it was packed with priceless treasures. I found the tomb itself rather uninteresting, but when I saw Tutankhamen's treasures in Cairo Museum I was astonished by their beauty.



The Avenue of Ram-headed Sphinxes at Karnak. Photograph by D. J. L. Harding, Milton.

The most wonderful tomb I visited was that of Seti I, which is decorated with richly coloured high reliefs showing the King with various Gods. The roof of the actual Burial Hall is beautifully carved with the signs of the Zodiac. Near the entrance the carving is only outlined, as Seti died before the colouring could be added. The chief interest of these tombs is their wonderful decoration, the colouring still perfectly fresh after 3,000 years. In the Nobles' Tombs I saw pictures of everyday life in ancient Egypt, showing duck hunting, with detailed paintings of the birds and of fish and crocodiles in the Nile.

The Funerary Temple of Queen Hatshepsut enthralled me because of the interesting carvings depicting a trading expedition to Punt. These showed boats with beautifully carved rigging very similar to that used on the Nile to-day. All kinds of water creatures are seen swimming about, including a swordfish, a rainbow fish and even a turtle. The houses in Punt are on poles and reached by ladders. The temple itself lies at the foot of the Theban hills and is built in three terraces.

I also visited the two huge statues built by Amenhotep III, which the Greeks wrongly called the Colossi of Memnon. D. J. L. HARDING (Milton).

Among the Model-Builders

By "Spanner"

A USEFUL FRICTION CLUTCH

The illustration below shows a friction clutch that closely follows the single plate clutches used on many actual vehicles. The clutch gives a remarkably positive drive when engaged, and it is compact enough to be used in most models. It is based on a suggestion put forward by J. Thomas, Manchester.

The driving plate 1 is a Wheel Flange bolted to a 2" Sprocket that represents the starter teeth of the engine flywheel. The Sprocket is fixed on the end of the engine crankshaft, but the Rod projects beyond the Sprocket and into the boss of a 1½" Pulley

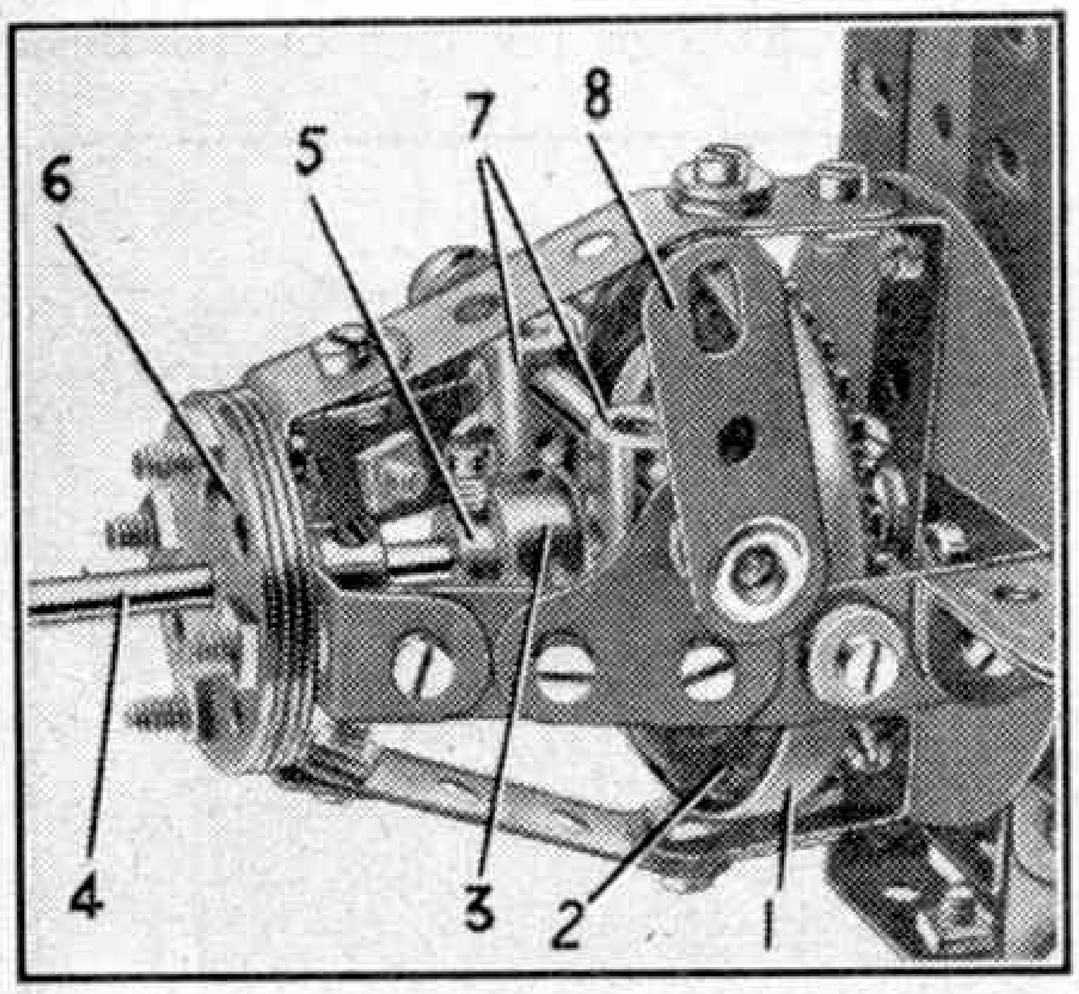


Fig. 1. Builders of model vehicles will find this compact friction clutch a useful unit for incorporating in the drive transmission.

fitted with a Motor Tyre 2. The Tyre forms the actual friction surface. The 1½" Pulley is gripped in a Socket Coupling 3, mounted on a Rod 4. The assembly is free to slide, but it is rotated with the Rod by a Bolt screwed into a Collar 5. The Collar is fixed on the Rod, and the Bolt engages the slot of the Socket Coupling. Half a Compression Spring is passed over Rod 4 between the Socket Coupling and the Collar, and this Spring forces the Tyre 2 against the face of the Wheel Flange.

Rod 4 is carried in a stout bearing formed by four Wheel Discs 6. Two 1½" × ½" Double Angle Strips are bolted at right angles across the Wheel Discs, and are linked by 2½" Strips to 2½" × 1" Double Angle Strips bolted at the rear of the engine. The Bolts holding the 1½" × ½" Double Angle Strips to the Wheel Discs are ½" in length and serve also as stud bolts for attaching the gear box to the clutch housing.

The withdrawal mechanism consists of two Couplings 7. These are locked on a Rod mounted in 1" Corner Brackets bolted to the housing, and ½" Bolts fixed in the lower cross bores of the Couplings engage the groove in the Socket Coupling. The clutch operating lever is a Crank 8.

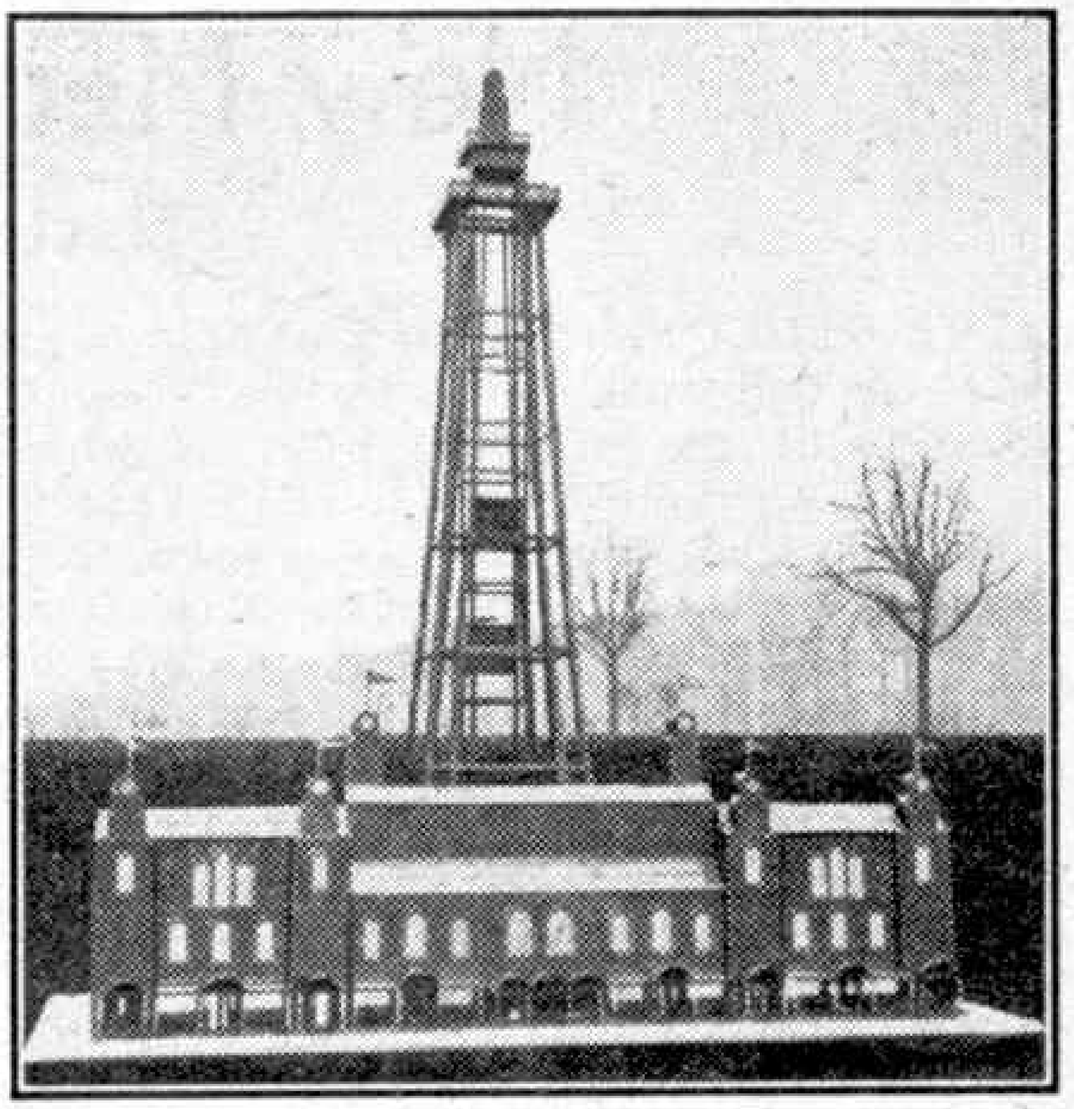


Fig. 2. An impressive model of the famous Blackpool Tower, built by Mr. A. H. Wright and his son John, Nottingham.

BLACKPOOL TOWER MODELLED IN MECCANO

Although Meccano parts are designed specially for building models of machines and mechanisms, they can be used also with excellent results for making models of architectural subjects, and I have received many very fine realistic models of this kind from model-builders in all parts of the world. One of the latest to come to my notice is an impressive reproduction of the famous Blackpool Tower and its buildings, which I am illustrating on this page. This great structure, which is over 9 ft. 6 in. in length and 9 ft. in height, is the work of Mr. A. H. Wright and his son John, who live in Nottingham. It is difficult to see all the fine details in the small illustration, but having seen a large photograph of the model I can assure readers that it really does contain some excellent constructional features. While the tower itself differs in many respects from the actual tower, its general proportions are good, and it gives a quite realistic impression of its famous prototype.

Inside the tower two lifts ascend and descend.

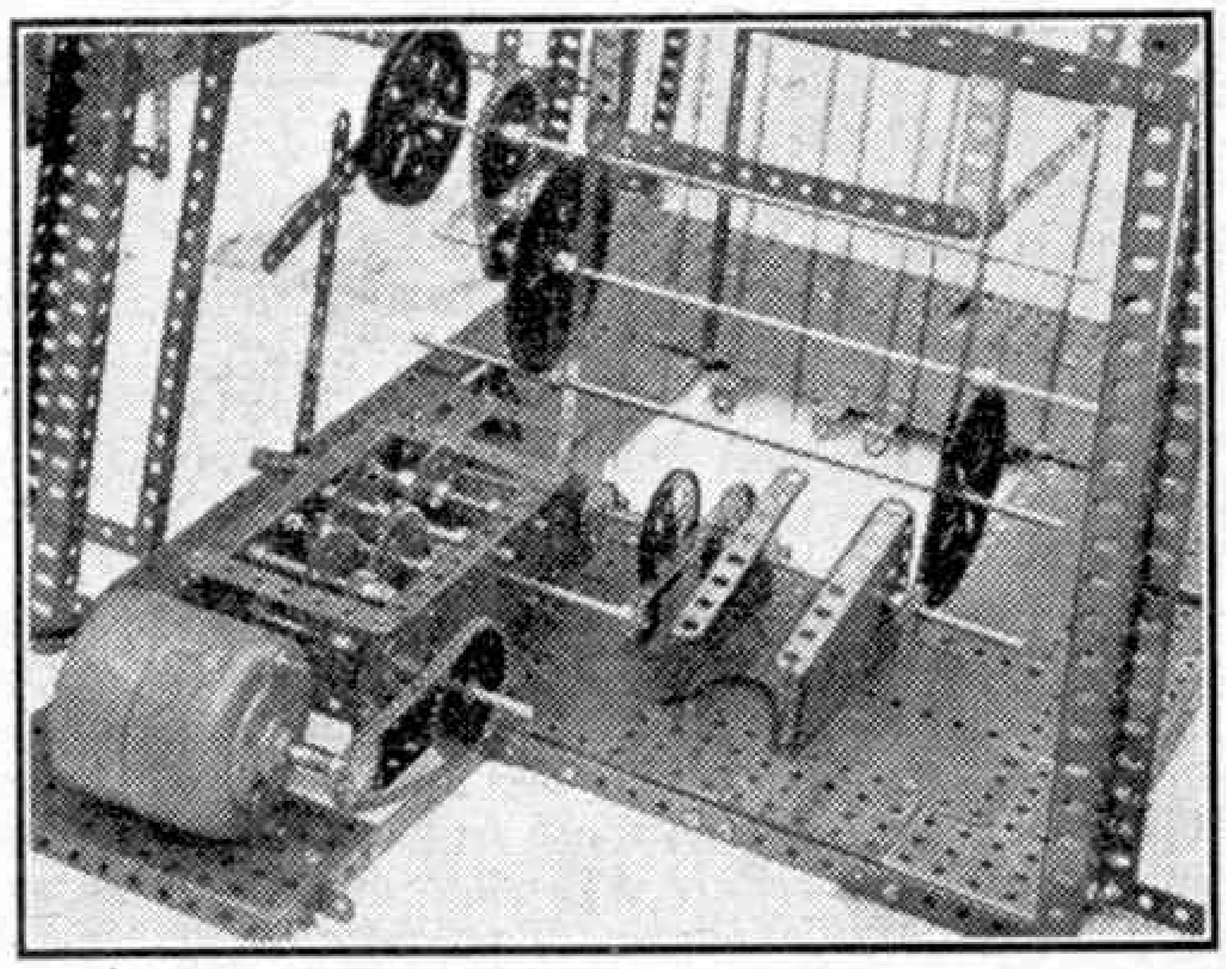


Fig. 3. The lift-operating mechanism built at the base of the Tower shown above.

New Meccano Model

Electric Truck

CONSTRUCTION of the neat and simple electric truck shown in Fig. 1 should begin with the cab, the front of which is built up from two $4\frac{1}{2}'' \times 2\frac{1}{2}''$ Flexible Plates bolted together as shown, and secured by Angle Brackets. A $\frac{1}{2}''$ loose Pulley bolted to the front of the cab forms a headlight, and a $1\frac{1}{2}''$ Strip bolted underneath the headlight represents the number plate. The windscreen frame, which is formed from two $2\frac{1}{2}''$ and two $4\frac{1}{2}''$ Strips, is next added.

The chassis of the van consists of $9\frac{1}{2}''$ Angle Girders 1 joined at their rear ends by a $4\frac{1}{2}''$ Angle Girder. The floor is filled in with two $4\frac{1}{2}'' \times 2\frac{1}{2}''$, four $2\frac{1}{2}'' \times 2\frac{1}{2}''$ and two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates which are bolted to the Angle Girders 1 and to the $4\frac{1}{2}''$ Angle Girder. The back of the truck is represented by two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates bolted to the $4\frac{1}{2}''$ Angle Girders. A $2''$ Strip represents the rear number plate.

Each side of the body is made up from a $5\frac{1}{2}'' \times 1\frac{1}{2}''$ and two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates. These are also connected to the Angle Girders 1. To the Flexible Plate 2 are secured a Semi-Circular Plate and a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate. These two parts form a portion of the side of the cab, which is completed by adding a second $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate that forms the door and is attached to the first Flexible Plate 3 by a Hinge. Two $1\frac{1}{2}''$ Strips are attached to the top of the Flexible Plates as shown. Two $5\frac{1}{2}''$ Strips, each bolted to the sides of the body, and the Strips 4 are secured to $9\frac{1}{2}''$ Angle Girders at their upper ends. The roof is attached to these Angle Girders and consists of four $5\frac{1}{2}'' \times 2\frac{1}{2}''$ and one $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate. Two $5\frac{1}{2}''$ Angle Girders bolted to the rear of the body form the rear roof supports.

The steering mechanism is shown at 5. It is mounted on two $1'' \times 1''$ Angle Brackets, which are bolted to the Flexible Plates that form the floor. A $2\frac{1}{2}''$ Strip 7 is bolted by its centre hole to the $1''$ Angle Brackets. Two sets of Double Brackets each bolted to a $1\frac{1}{2}''$ Strip by a $\frac{3}{8}''$ Bolt, are lock-nutted to the $2\frac{1}{2}''$ Strip 7. A second $2\frac{1}{2}''$ Strip is attached in the same manner to the ends of the $1\frac{1}{2}''$ Strips, along with a $3''$ Strip. This is connected to a Bush Wheel by lock-nutted bolts. A $3\frac{1}{2}''$ Rod representing the steering column is fixed in the boss of the Bush Wheel. The top of the Rod is passed through the Flexible Plate 8, which is attached to the front by two $1\frac{1}{2}'' \times \frac{1}{2}''$ Double Angle Strips. This represents the control board. A $1''$ Pulley with Rubber Ring forming the steering wheel is fixed to the top of the $3\frac{1}{2}''$ Rod. The back of the cab is held in position by two $4\frac{1}{2}''$ Double Angle Strips, bolted to the Flexible Plates. It is made up of one $4\frac{1}{2}'' \times 2\frac{1}{2}''$ and two $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates. The driver's seat is a $2\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plate bolted by Double Brackets to the back of the cab.

The *Magic* Motor is bolted underneath the floor as shown. The front road wheels are each fitted with $1\frac{1}{2}''$ Rods, which are

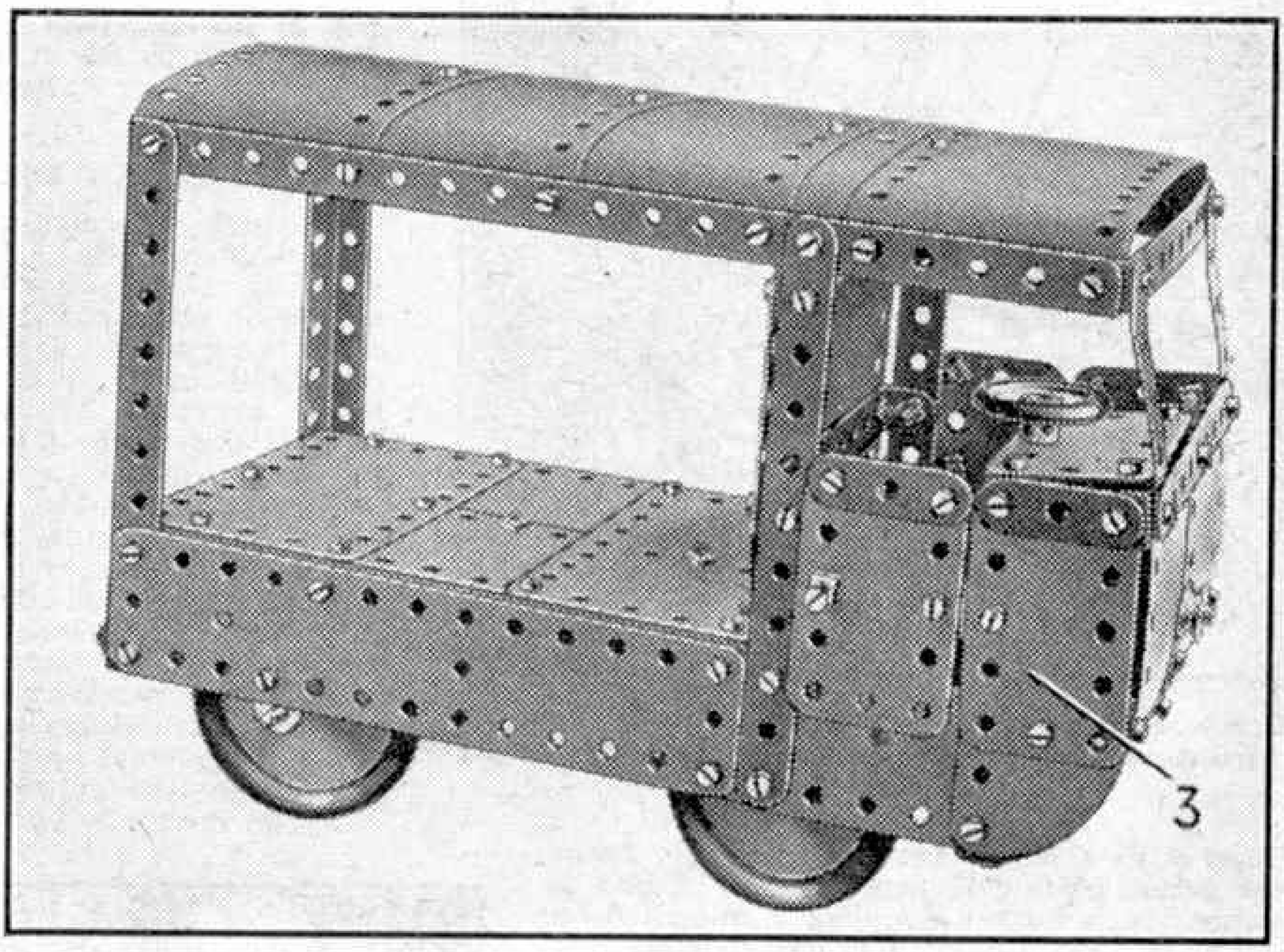


Fig. 1. A simple electric truck driven by a Magic Motor.

passed through the Double Brackets and held by Collars. The rear wheels are fixed on a 5″ Rod, which is held in Fishplates bolted to the sides of the body. This Rod also carries two Collars and a 2″ Pulley. The drive is taken from the Motor by a Driving Band to the 2″ Pulley on the rear axle.

Parts required to build model Electric Truck: 2 of No. 1b; 2 of No. 2; 1 of No. 2a; 1 of No. 4; 4 of No. 5; 1 of No. 6; 7 of No. 6a; 4 of No. 8a; 2 of No. 9; 2 of No. 9a; 2 of No. 10; 4 of No. 11; 4 of No. 12; 2 of No. 12a; 1 of No. 15; 1 of No. 16; 2 of No. 18a; 1 of No. 20a; 1 of No. 22; 1 of No. 23; 1 of No. 24; 108 of No. 37; 16 of No. 37a; 3 of No. 38; 2 of No. 48; 4 of No. 48c; 5 of No. 59; 7 of No. 111c; 2 of No. 114; 1 of No. 155; 1 of No. 186a; 4 of No. 187; 15 of No. 188; 3 of No. 189; 4 of No. 190; 5 of No. 191; 4 of No. 192; 2 of No. 214; *Magic* Clockwork Motor.

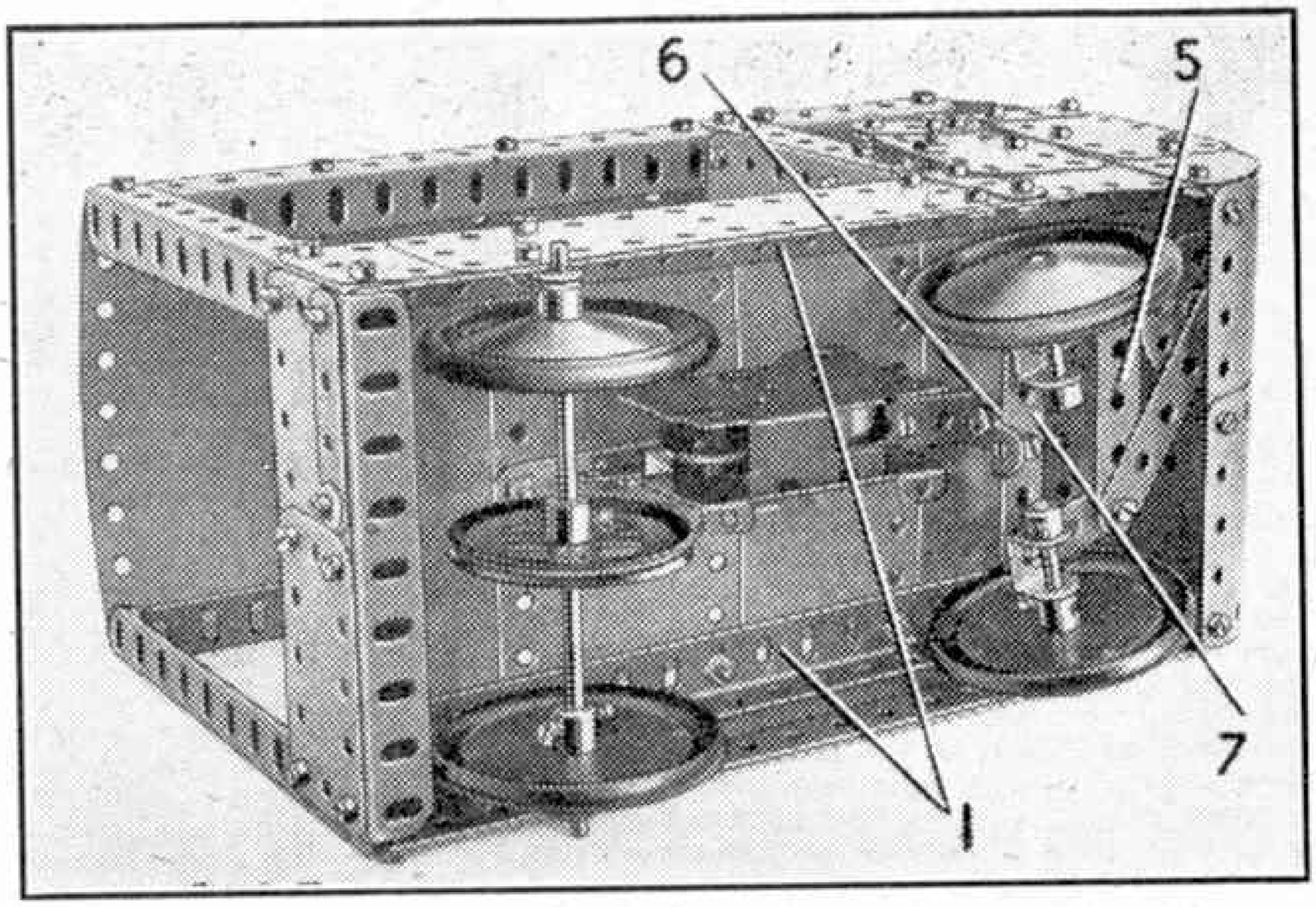


Fig. 2. This illustration shows the steering gear and the way in which the Motor is arranged to drive the rear axle.

A Meccano "Mechanism" Competition

This unusual type of model-building competition should appeal to all boys who like to satisfy their inventive abilities by designing mechanical movements from their own ideas.

Most Meccano boys doubtless are aware that the terms "mechanism" and "machine" are often used indiscriminately. What is usually meant by "machine," however, is a mechanical contrivance considered as a whole, while by "mechanism" we refer to the working details of a machine. Thus a machine may consist of an assembly of "mechanisms."

One of the earliest known mechanisms is the screw, which is really a modification of the inclined plane. Its use in various forms in the construction of modern machinery is practically limitless and it is therefore of special interest to Meccano model-builders.

A typical example of a machine employing the screw as its principal feature and driving element is to be found in the ordinary screw-jack, which is used for lifting heavy bodies.

Screw gear already plays an important part in a number of Meccano models, but there must be many new and interesting mechanisms that can be built with its aid. In this competition therefore we shall award a number of prizes for the most ingenious models of Meccano screw mechanism.

All entries must feature some form of screw gear. *It is not necessary to build a complete model.* All that is required is just a section of a model embodying some movement or effect gained with the aid of screw gear.

Intending competitors should remember, however, that any mechanism that is merely copied from Meccano Instructions Books is not eligible for this contest. Each entry must be the competitor's own handiwork both in design and construction.

Actual models must not be sent. It is only necessary to submit either a clear photo or a good drawing together with a short description of the mechanism. The competitor's age, name and address are to be written on the back of all photographs or drawings sent. Entries will be divided into two Sections, A, for readers of all ages residing in the British Isles, and B, for readers residing Overseas. Envelopes containing entries are to be addressed to "*Mechanisms Contest, Meccano Ltd., Binns Road, Liverpool 13.*" Closing dates: Section A, 30th June 1951; Section B, 30th September 1951.

Prizes will be awarded in each Section as follows: First, Cheque for £3/3/–; Second, Cheque for £2/2/–; Third, Cheque for £1/1/–. There will be also five further prizes each consisting of a Postal Order for 10/–.

Photographs or drawings of unsuccessful contributions will be returned to the sender only when a stamped addressed envelope is enclosed for that purpose. It should be noted, however, that photographs or drawings of prize-winning entries become the property of Meccano Ltd.

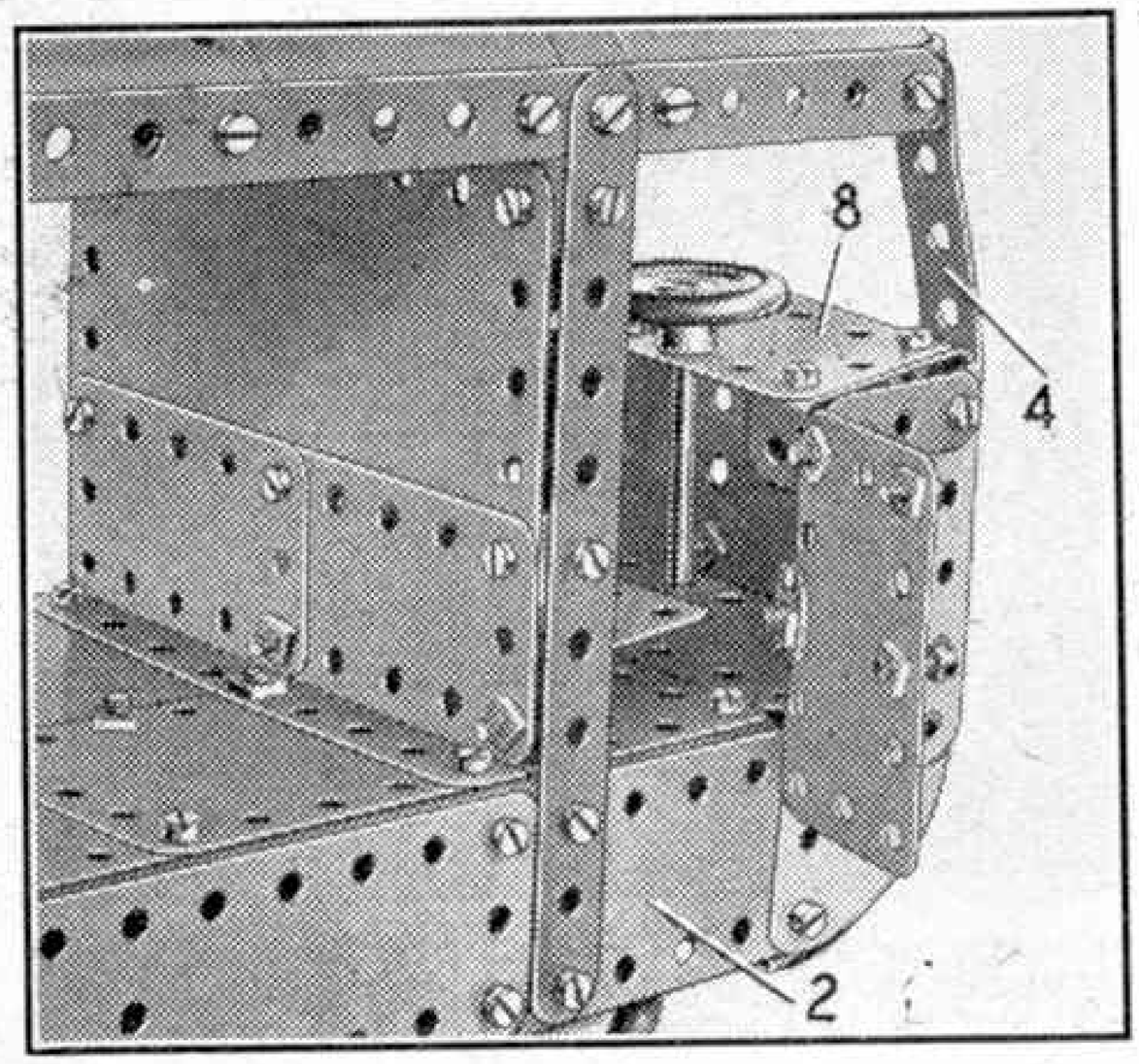


Fig. 3. The front of the truck showing details of the driver's cab.

Club and Branch News

WITH THE SECRETARY

BRIGHT DAYS IN STORE

I am writing these notes well ahead of the date on which they will appear in print. For this reason I cannot be sure that the bright days for which we look in May will be the lot of Clubs and Branches wishing to enjoy outdoor pursuits of any kind, but I can express hopes that the weather this month will be good and that all of you will make the most of it. Games, visits, rambles and pleasure trips of any kind should be organised whenever possible to give pleasure to members, and these at the same time should keep a keen lookout during their wanderings for ideas that they can put into practice later in their model-building, or in some other Club or Branch Room pursuit.

START OUTDOOR PHOTOGRAPHY NOW

Bright days and sunshine provide excellent opportunities for the use of cameras, and some at least of the Summer excursions should be planned with photography in mind. Even if snapshots only are the aims of members it is best to organise a small photographic section, in charge of a member of the organisation who possesses some experience, for a little good advice will save the waste of many films through wrong exposure or the selection of poor viewpoints.

In many Clubs and Branches there are members who are fairly expert in photography, but whether photographs taken on Club and Branch occasions are well prepared pictorial prints, or just snaps showing members enjoying themselves in some unexpected and perhaps laughable way, I should like to see them. There seems no difficulty in getting formal group photographs of members, taken indoors, but I should like also to have the opportunity of reproducing on this page happy pictures of members enjoying themselves outdoors.

MERIT MEDALLIONS

It is not too late to send in Merit Medallion nominations for the Session that ended a month ago. I wish also to remind Leaders that these awards are available for good work during the Summer Sessions. There are many ways in which an alert and enthusiastic member can add to the pleasures and profit of Club life during the outdoor season, and Leaders should recognise any particularly useful and enterprising activity by nominating the member concerned for this award.

CLUB NOTES

CRYPT GRAMMAR SCHOOL M.C. — Model-building Competitions are becoming increasingly popular, and there was a record entry in the most recent one. Indoor activities have included a Table Tennis Tournament. A Cycle Trial has attracted many entries. Club roll: 40. *Secretary:* D. H. Gettings, 17, Riversley Road, Gloucester.

EASTWOOD SCHOOL (GLASGOW) M.C.—Members are increasingly busy, and so many models were constructed by them that a special Competition was organised, a fine marine engine being awarded first prize. Model-building Contests are now being arranged monthly. Woodwork also is enjoyed, and a special Photographic Evening has been held. Club roll: 19. *Secretary:* James Wright, Holmwood Cottage, Netherlee Road, Cathcart, Glasgow S.4.

MILE END (PORTSMOUTH) M.C.—Intense activity continues, with Film Shows, Discussions and Outings. Model-building Competitions add to the fun, and a very successful Birthday Party has been held. A great Exhibition is planned, at which the attractions will include a Radio Transmitting and Receiving display, an Arts and Crafts Stand and model aeroplanes. Club roll: 35. *Secretary:* Mr. A. J. Nicholson, 213, Sultan Road, Buckland, Portsmouth.

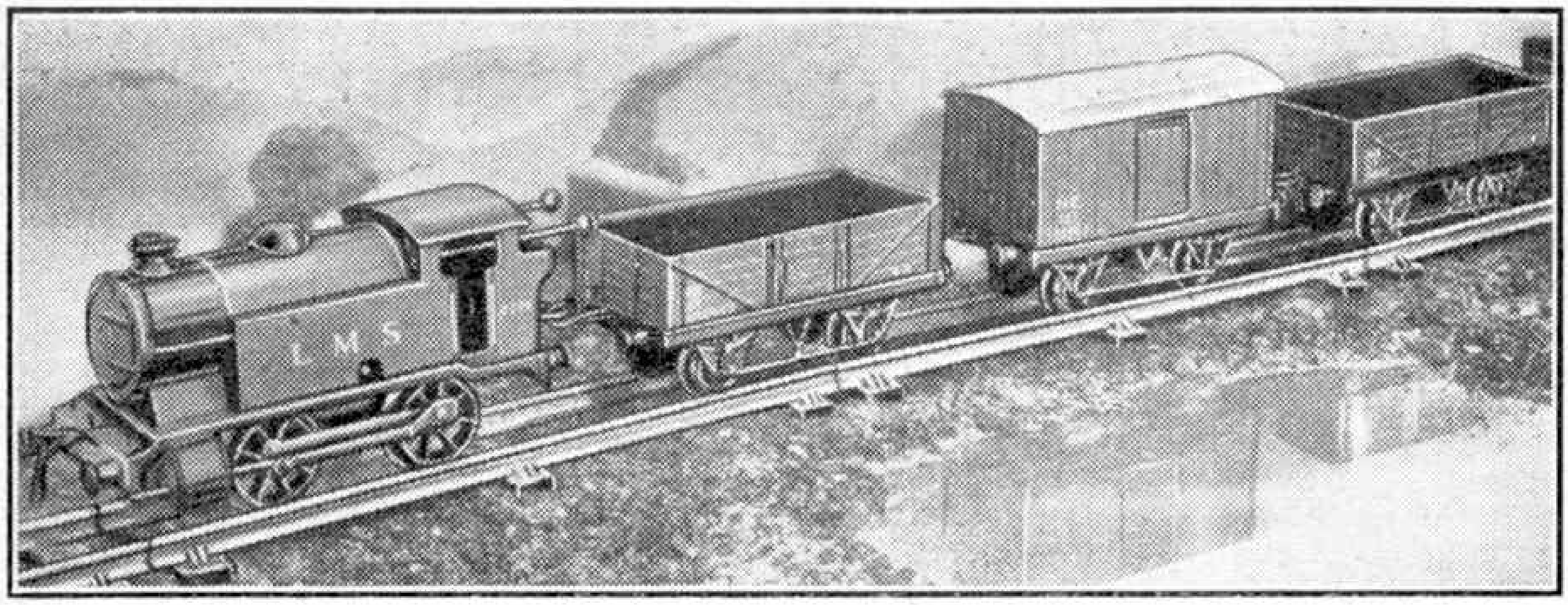
GREAVES METHODIST CHURCH M.C.—The Club's Exhibition was extremely successful and was well attended, in spite of poor weather. There was an excellent display of models and the Hornby Railway section proved very popular. Club roll: 13. *Secretary:* Mr. T. Starr, "Derwent," Scotforth Road, Lancaster.

BRANCH NEWS

LOUGHTON—Intensive work has continued on the Branch track. Signal Boxes have been reconstructed and the colour light signal system re-organised. Work on the layout is carried on during one evening a week, and operations on the Branch track occupy another evening. New members have been enrolled, but there is room for more and enthusiasts wishing to join should get in touch with the *Secretary*, F. G. H. King, 12, Shelley Grove, Loughton, Essex.

INGLEDEW COLLEGE (LEEDS)—Membership is increasing and interest is growing. The track has been cleaned and put into good order. Ballast has been laid down to give a realistic appearance. *Secretary:* M. J. Fenwick, 8, Sandhill Drive, Alwoodley, Leeds.

Members of the Bury Grammar School M.C., with Mr. T. Kershaw, Leader, who is the middle of the front row. On Mr. Kershaw's left is J. C. Hart, Secretary, and on his right W. G. Fargher, Treasurer. This excellent Club was affiliated in January of last year. Model-building is carried on with great enthusiasm and excellent displays have been made at Exhibitions and in Club Competitions.



An unusual lineside effect provided by a "pond," represented here by a sheet of glass. The rocky background helps the natural effect.

Along the Hornby Track

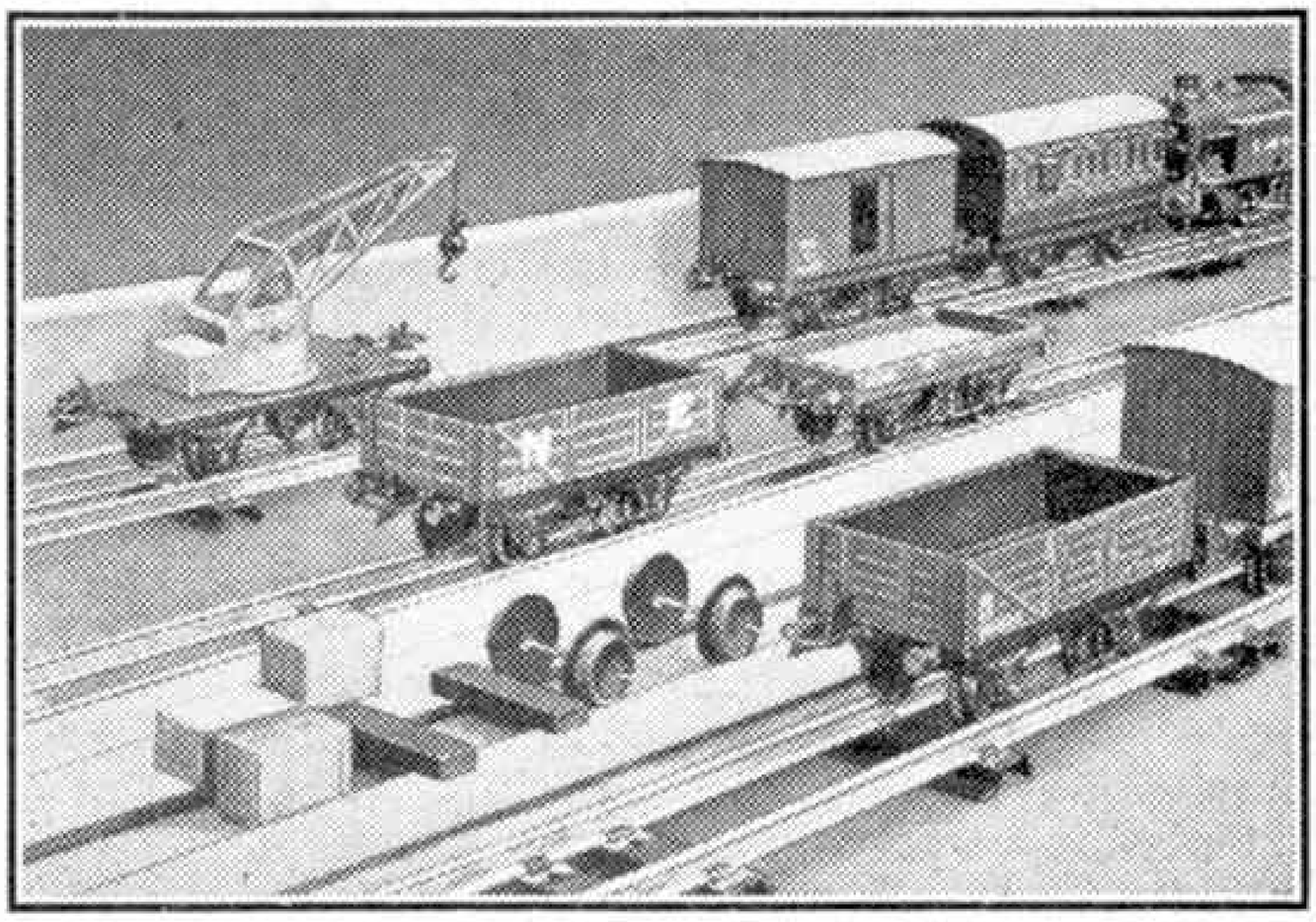
MOST Hornby railway owners like to do something towards improving the bare appearance of the plain track when a layout has just been put down. The owner of a permanent line usually develops his own schemes, building up cutting banks, hills and other features by spreading paper or perhaps some fabric that he can obtain over a wood framework arranged to follow roughly the contours required. Glue and paint, sawdust, sand, or some of the scenic materials that are to be had nowadays from many hobby shops, will help the finishing of the surfaces according to the features to be represented. When water has to be a feature, glass or plain cellophane laid on a suitably painted surface can be made quite convincing.

On a portable railway it is not so easy to arrange scenic items. Each feature has to be self-contained on its own base. Good effects can be obtained, but the advantage for this type of work is really with the owner of the permanent layout.

Either kind of railway can be provided with a scenic background that can stand behind the system as a whole. A piece of plywood or thick card can quite well form the actual surface on which the countryside or other features required can be drawn and painted. Alternatively the railway owner can build up, as it were, a scene using cuttings of various buildings, trees, animals and so on taken from coloured illustrations in magazines of different kinds. It is surprising how these can be worked together into a general scene if sufficient trouble is taken to position them in an appropriate manner.

Miniature buildings of all kinds can be provided for either the permanent railway or the portable railway, and some good examples of the type of work possible have frequently appeared in the illustrations of miniature villages and towns that have been described in the *"M.M."* during the past few years.

Sections of roadway, pavement and lineside walls can be drawn and cut out of wood or card, and the addition of features of this kind adds considerably to the general effect.



A yard scene on a Hornby layout. The paving between two of the tracks, and the boundary wall, are made of wood.

Sidings and Branches in Hornby-Dublo

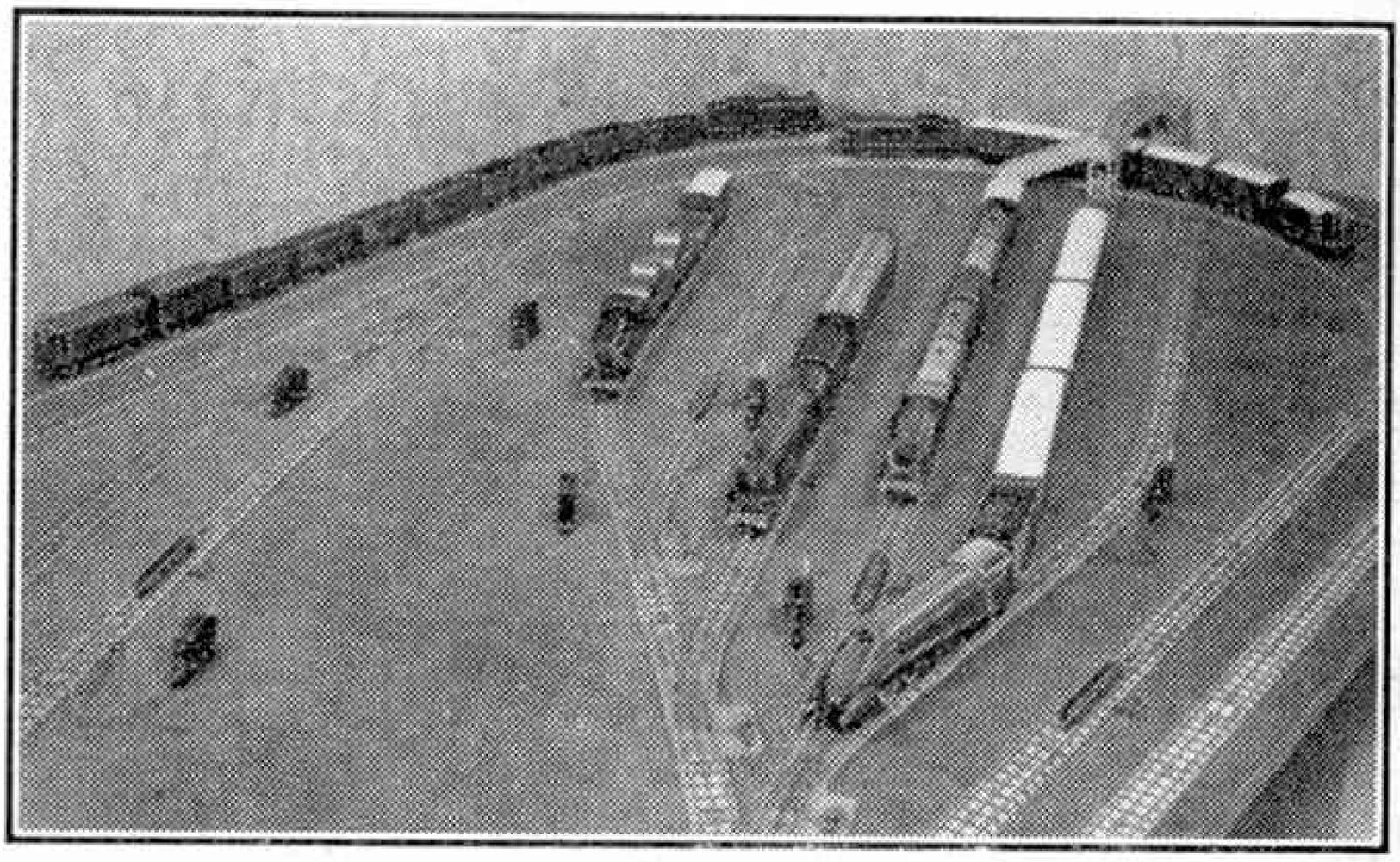
AN early track development on practically any Hornby-Dublo layout is the addition of Points and some further rails to make a siding. Even this simple extension of the original oval makes operations more interesting. When a train has finished its journey it is much more real to be able to shunt it into the siding, even if it is the only one on the layout, than to let it stand on the main track until the next run is to be made.

Most Hornby-Dublo owners will be aware of the relationship between the Points of the Hornby-Dublo system and the ordinary rails. The straight section of Points corresponds exactly in length to the standard Straight Half Rail. Similarly, the curved section of Points, either right-hand or left-hand, corresponds in length and radius to the standard Curved Half Rail.

The simplest form of siding is that taken directly off the main line and stretching diagonally across the space within the main oval. If the track is of reasonable size to begin with, the siding will probably be long enough for most requirements; then the addition of the siding involves no increase in the space occupied by the layout. As the railway develops further such diagonal sidings may form the basis of a more extensive yard. By the time this stage is reached the lengthening of the original layout necessary to accommodate the system of sidings will probably have taken place already in the general process of development.

The inclusion of several points in the diagonal track allows a series of sidings to be taken off this track, much on the lines of the scheme shown in the interesting illustration on this page. This picture shows part of the layout of Mr. Joseph Marshall, of Larne, Co. Antrim, and it is interesting to note that on this system two different sets of sidings are arranged each in a different manner. This will be apparent by comparing the first illustration referred to with the top picture on the next page.

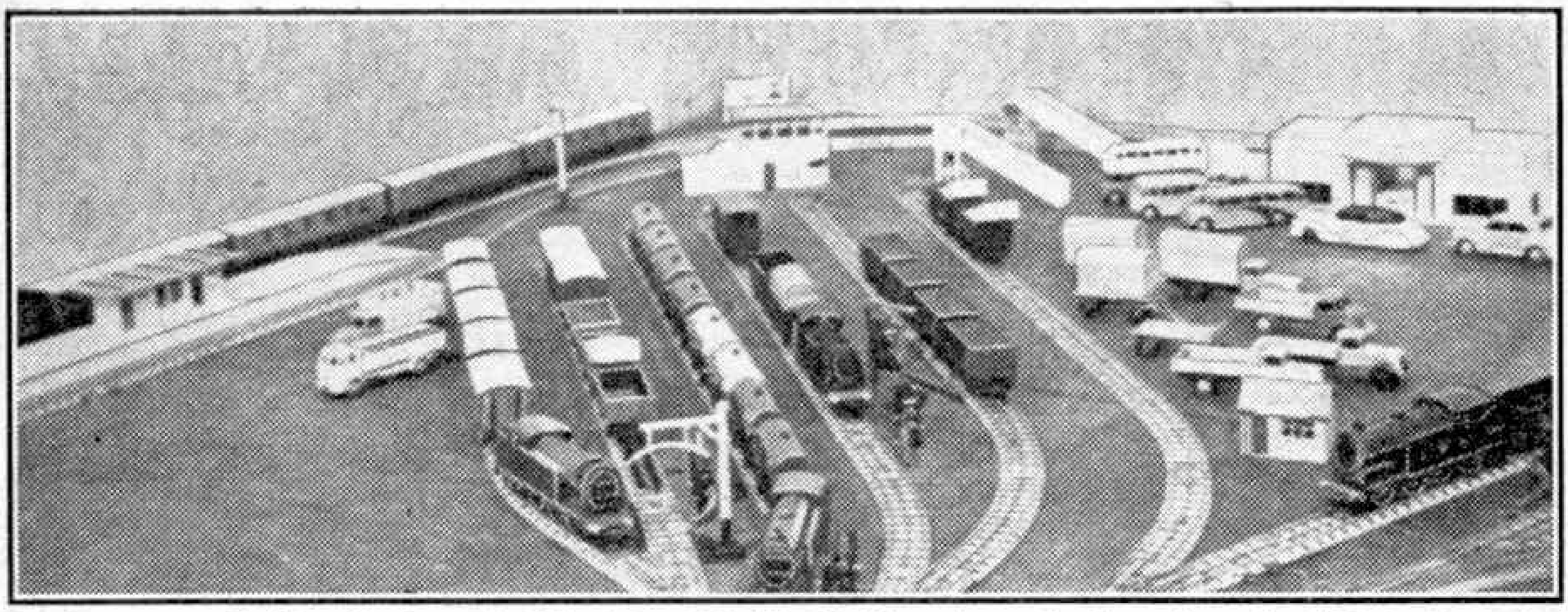
It should be noted that, when a series of roads is taken off the diagonal track in the way just referred to, the Points cannot be laid immediately adjacent to one another. This is because the siding to be formed from the curved branch of one set of Points would foul the points lever on the next set. Therefore the Points have to be separated from one another by at least one Straight Quarter Rail.



Well-arranged sidings on the Hornby-Dublo layout of Mr. Joseph Marshall of Larne, Co. Antrim. The Isolating Switches are placed close to the sections that they control.

Where there is plenty of space a Straight Half Rail can be used instead, and this will result in the sidings being well spread out from one another. This gives plenty of room between the individual siding roads so that any Signals, Isolating Switches, Loading Gauges or Water Cranes that are required in most goods yards can be fitted conveniently between the tracks. One pleasing result of this separation of the siding roads is that the operator looking across his layout can see the individual vehicles on the different roads more clearly. This is of considerable advantage when shunting and marshalling operations involving the use of the Uncoupling Rail are being carried out.

Another method of arranging sidings is shown in the upper illustration on page 231. Instead of a series of Points of the same hand leading from a diagonal



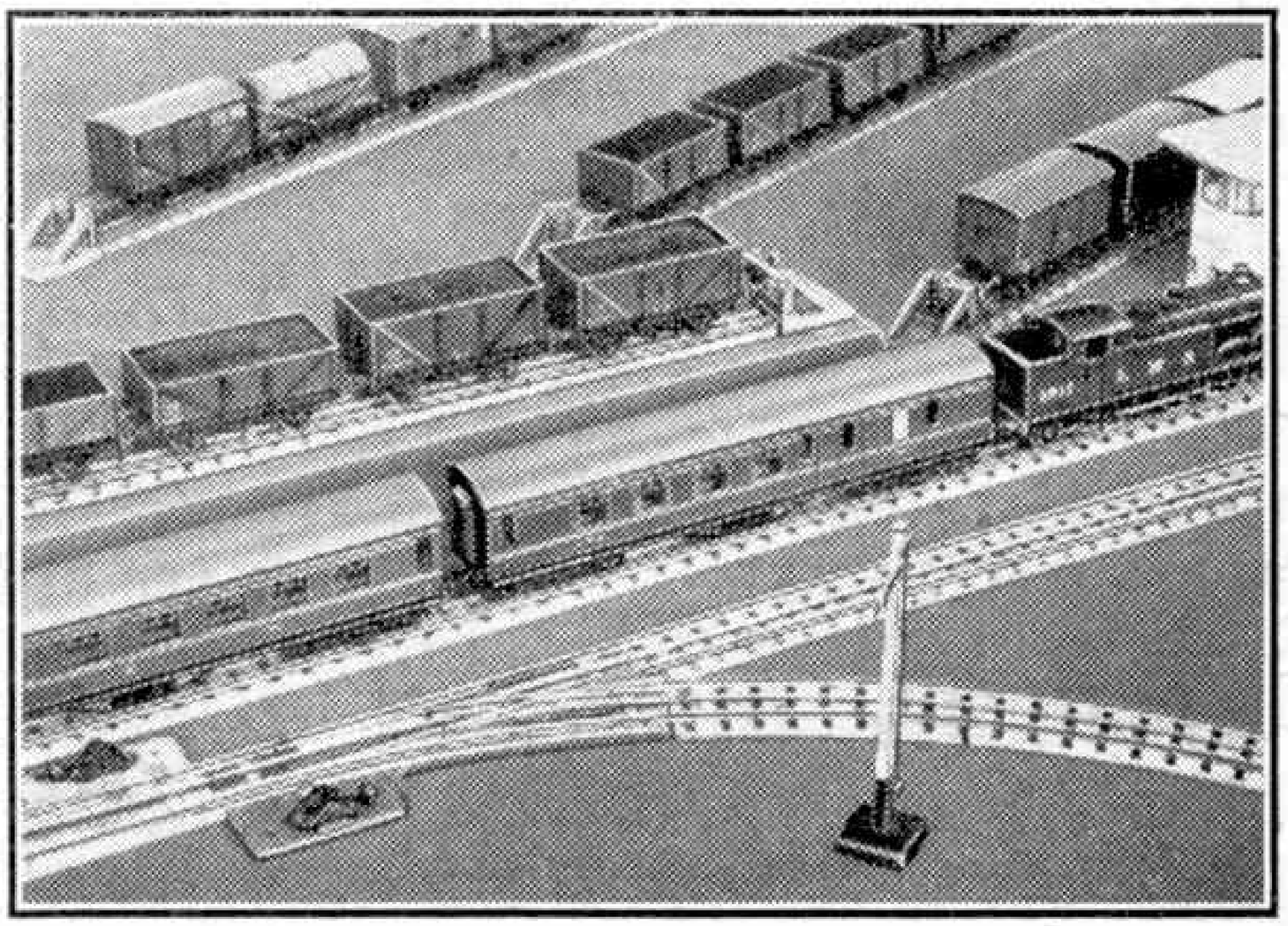
Another group of sidings is shown in this view of Mr. Marshall's system. Good use is made of Dinky Toys road vehicles in the goods yard.

track to a succession of siding roads, the yard area starts off with a single set of Points; and others, some right-hand and some left-hand, are added to both the branches to which the first set gives access.

This scheme is capable of considerable variation according to the amount of material that the individual Hornby-Dublo owner possesses. The general arrangement may not be quite so compact as that attained by the first scheme, but it gives the impression of having been added to at different times, just as so many real railway layouts do. The spacing of the different siding tracks can be varied. It is thus possible to allow a goods loading bank to be placed between certain tracks; or alternatively the space can provide a roadway where Dinky Toys motor vehicles can be backed up to standing wagons as if loading or unloading is going on.

In any yard or series of sidings on which shunting is done it is wise if possible to include what is known as a shunting spur. This is invariably a dead-end road lying opposite to the sidings themselves. As the engine draws out vehicles from one or other of the sidings it works into the shunting spur instead of one of the running tracks. The yard or sidings can then form a complete main section, separated from the running track by means of an insulating gap in the centre rail and provided with its own separate Transformer and Controller. Shunting movements can then go on indefinitely quite apart from any operations that are being carried out on the main line.

Where a branch track is taken off the main line by means of Points the course of the branch will depend mainly on the amount of space available on the layout. Sometimes it is possible to accommodate a short branch line inside the main oval but space will not always permit this to be done. Where the branch line diverges outside the main track it can strike off "across country" if the situation of the layout makes it possible. If not, the branch line will have to follow more or less closely to the main line until, probably in one corner of the layout, the branch terminus is reached. It may be convenient to keep the branch separate electrically from the main line but this will depend on the amount of traffic to be handled.



In the foreground is a plain turnout leading to a system of sidings. Immediately beyond the main line is an elevated coal road.

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For other Stamp Advertisements see also pages 234 and xvi.

Stamp Collecting

The Issues of Pakistan

By F. Riley, B.Sc.

LAST month I dealt with the stamps of Ceylon, one of the three new Dominions of the British Commonwealth created after the end of the war. Another of these Dominions is Pakistan, now the largest Moslem state in the world. Its population is over 70,000,000, and to this number Bahawalpur and Khairpur, the two Punjab States that elected to join it, add 2,000,000 and 300,000 respectively.

As in the case of Ceylon, an Independence Issue was the first to appear after the birth of Pakistan. This consists of four stamps, recess printed in Great Britain. The highest value, 1 rupee, is scarlet. It was designed by a famous artist of Lahore, Abdul Rahmen Chugkhi, and is in the Mogul tradition. The Crescent and the Star are represented, with a leaf pattern, and altogether the stamp is really attractive.

The two lowest values, 1½ a. and 2½ a. show scenes in Karachi, the capital of the new Dominion. This city is at the extreme western end of the Delta of the Indus. It had a population approaching 400,000 in 1947, but by 1950 it was estimated that this had grown to well over 1,000,000, the chief reason for this expansion being the arrival of Moslems from India. Karachi is the seat of the Pakistan Constituent Assembly, the parliament of the Dominion, and the 1½ a. stamp shows the building in which this meets. The city is a great airport, and is a post on the main British Overseas Airways Corporation services between Great Britain and India, Singapore and Australia. Its importance as an air travel centre is indicated by the design of the 2½ a. stamp, which shows the entrance to Karachi Airport.

For the design of the fourth stamp of this issue, the 3 a. value, we go north to the Punjab. The greater part of this land of rivers is now included in the Dominion of Pakistan. The stamp shows a historic feature of Lahore, the chief city of West Punjab, as the Moslem province is named. This is the gateway to Lahore Fort, the origin of which can be traced back nearly 1,000 years. The Fort was enlarged and modernised by the later Mogul Emperors.

A definitive series of 20 stamps appeared in the same year as the Independence Issue, with values varying from 3 p. to 25 r. There were many colours in the seven designs of these stamps, one of which is reproduced on this page. This is the 2½ a. value, which shows the Lloyd Barrage, a gigantic structure that stores up the waters of the Indus as it flows through Sind, the province of which Karachi is the principal city, and releases it through canals to irrigate the surrounding country. The Lloyd Barrage has greatly increased the productive capacity of the country, and another great barrage to cost £15,000,000 will carry the work further.

The five-pointed Star and the Crescent have always been associated with Moslem countries, and three values of this set, 1 a., 1½ a. and 2 a., include these symbols in their design. The horns of the Crescent point to the upper right corner of the stamp, with the Star between them. A similar design is used in stamps of another issue that followed in 1949, but this time the horn of the Crescent points to the left, an interesting change. It is the 1949 Star and Crescent stamp that is illustrated on this page. On the 1948 issue the symbols have the same attitude as they have on the upper corners of the three lowest values of the Independence Issue.

The three lowest values of the 1948 issue show the scales of justice. Among the designs of the higher values are two with more Karachi scenes, one showing the airport and the other the city's Port Trust buildings, for Karachi is also a great seaport. The remaining two gather their subjects from the farthest corners of Pakistan. One shows a hostel of the University of Dacca, which is the chief city of East Bengal, a part of Pakistan separated from the rest by India; the other shows the Khyber Pass, and gives a fine impression of the rugged character of the country in which this historic gateway into India from Central Asia is situated.

Two of the stamps illustrated on this page come from Bahawalpur, which has issued a great variety of stamps in recent years, all well printed and of attractive design. It seems surprising that so many different stamps, both ordinary and official, should be required for this comparatively small state. Most of these in the albums of collectors must be mint, for used seem very scarce, if indeed there are really any available. Yet they are interesting.

Most of their designs include a portrait of the Ameer, and generally they illustrate scenes in the state, and its chief products and its animal life. Two of them are illustrated here. One celebrates the first anniversary of the union with Pakistan, which is typified by portraits of the Ameer and of Mr. Jinnah, the great Moslem leader. The other is a Centenary issue, showing soldiers of 1948 and of 1848, the year of the Multan Campaign, one of the wars that ended in the British conquest of the Punjab.

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For other Stamp Advertisements see also pages 232 and xvi.

Stamp Gossip

and Notes on New Issues

By F. E. Metcalfe

NATURALLY collectors will be most occupied, within a few days after these notes are being read, with the new British stamps, not only with the two to commemorate the Festival of Britain, but also with the change of colours. A word of warning here will not be out of place. Just as new stamps come out, or in this instance new colours, so do other stamps go out. Some of the overprinted stamps that are being replaced have had a very short life, and as dealers will not be able to put away big stocks several of these will prove exceedingly scarce later on.

It is surprising what little notice British collectors take of all those stamps that have been overprinted during the past few years for use in territories overseas, such as Bahrain, Morocco, etc. While one cannot say for certain that they will ever become very popular, if they do some rarities are going to crop up, and most of these will probably be found among the very stamps that are being changed at the beginning of May. In any event collectors have nothing to lose by buying these obsolescent stamps now, and the writer of these notes feels so certain about their possibilities as an investment that he is taking very good care to fill up blanks. There are a few blanks, for there have been so many of these stamps recently that have come in almost unnoticed, such as the B.A. overprints for Eritrea, Tripolitania, etc.

Now for a few words on an interesting little set that surprised everybody when it appeared in February. The new set for Maldive Islands is the one referred to.

The Maldive Islands lie in the Indian Ocean, some distance from Ceylon, but are politically connected with that Dominion. This is the reason why the new stamps have not got the Mult. Script C.A. watermark. There are nine stamps in the set, and the printers were Messrs. Bradbury Wilkinson. It was all very hush hush, and now collectors are trying to fill out blanks of the set that has been replaced. By the way, as the new stamps have to be bought in Ceylon or in Male, the capital of Maldive Islands, it may be some time before there are many about, but they will come all right and collectors should not pay any inflated prices.

There are many enthusiastic collectors of modern U.S.A. stamps. This is an inexpensive group—though only one country is concerned, America produces so many new stamps that it becomes a group—and for junior collectors it needs a lot of beating. Recently a collection of these stamps, got together by a young collector, won quite a big competition, and all these stamps had not cost more than a pound, which shows the possibilities. Of course, not all U.S.A. stamps are artistically first class, and it may interest readers to see an illustration of the stamp that was chosen by the editors of American stamp magazines as the best design of any U.S.A. stamp issued during 1950.

And now for a stamp which was recently issued by Hungary. This is one of three issued in honour of the anti-Russian patriot Josef Bem. Actually Bem was a Pole by birth, born in 1794, and in 1848 he turned up in Hungary, after many adventures. He proved a great leader, fighting successfully against both Russia and Austria. The Hungarians think a great deal of Bem, and they have certainly done him proud with these three stamps. It is interesting to compare the American stamp with the winning design with the one from behind the "Iron Curtain." It must be admitted that for once the East wins.

While we are on a question of designs we may as well illustrate the high light of the lot, a new Turkish stamp. It is a pity that the illustration will not show up the colours and gilt with which the stamp has been printed. Farabi, the Arabian philosopher, is the man depicted, and there are four stamps in the set.

For some time K.G. VI commemorative stamps have been rather under a cloud. South African Royal Visit, Victory stamps, etc., were bought in such huge quantities that they dragged other sets down with them. Remembering what had happened to these stamps, both dealers and collectors alike did very little stocking up of more recent commemoratives, but now the swing is the other way, so the tip of this month is to be sure to buy sets of St. Kitts-Nevis "Anguilla," Tonga "50th Anniversary" and the Gibraltar "Constitution" if you have not got them already. If you have got them don't buy, for this hoarding of stamps is not collecting at all.

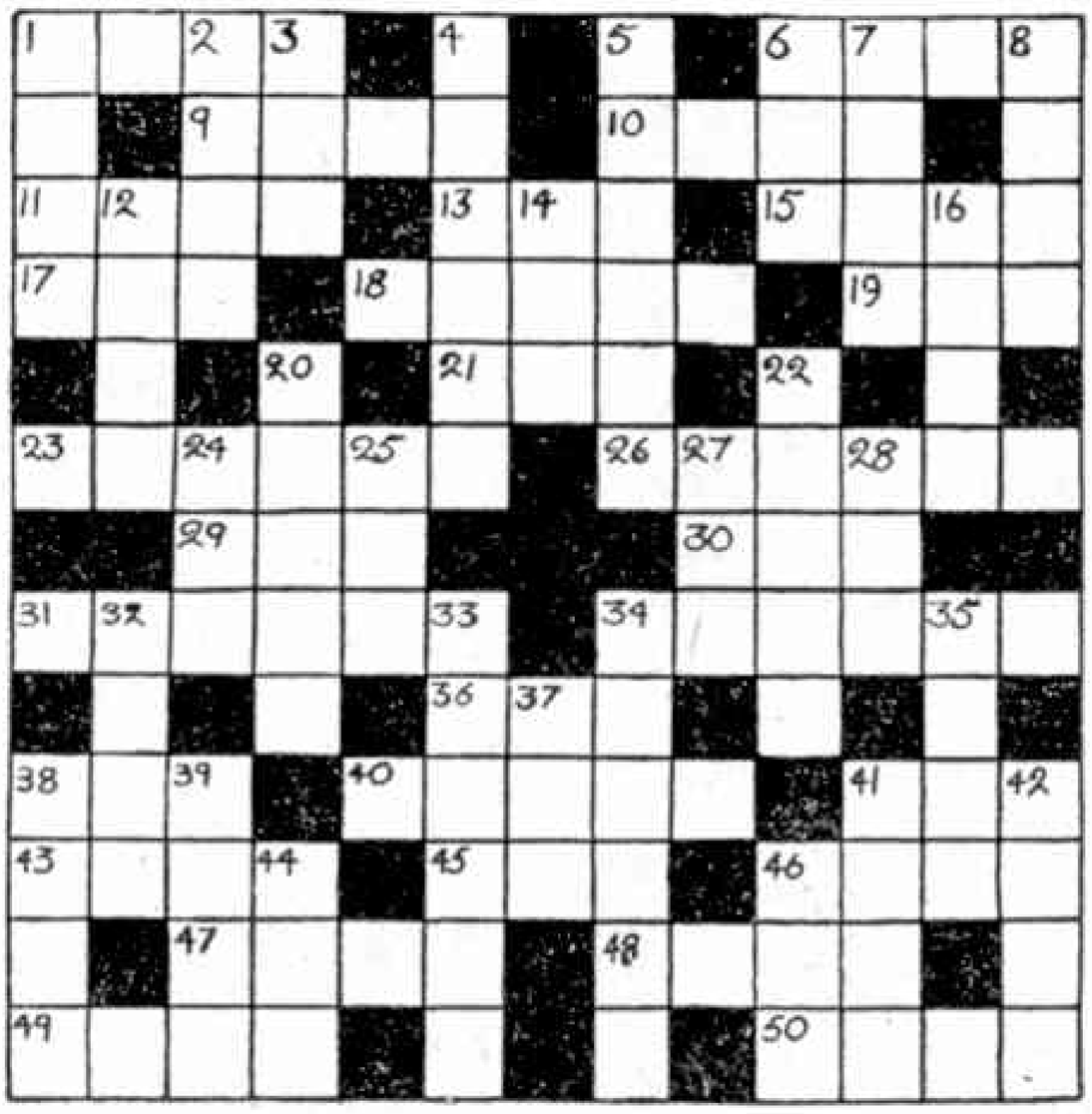
Competitions! Open To All Readers

Prize-winning entries in "M.M." competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

An Easy Crossword Puzzle

CLUES ACROSS

1. Pivot.
6. Yields a plant.
9. Extent of surface.
10. Drink made from honey.
11. Urge onward.
13. Kind of cloth.
15. Heap.
17. Aged.
18. Fruit.
19. Spread or turn.
21. Transport vehicle.
23. Italian city.
26. Gain freedom.
29. Has sound uses.
30. Equality.
31. Ornamental shelf.
34. He suffers for beliefs.
36. A frost production.
38. Traps flies.
40. Can be worn, but suggests theft.
41. Wily.
43. Spoken.
45. Commotion.
46. What to do with a cake.
47. Colour.
48. Face, usually round.
49. A small hollow.
50. Rent,



CLUES DOWN

1. In addition.
2. Praise.
3. Make a mistake.
4. A thorn stockade.
5. Lay on.
6. Rises in Spring.
7. Prepare for printing.
8. Action.
12. Entreaty.
14. Bird, but does not fly.
16. Spring.
20. Condition.
22. Frighten.
24. River in England.
25. Yorkshire river.
27. Health resort.
28. Skill or craft.
32. Declare.
33. Form of prayer.
34. Tune.
35. Found in an egg.
37. Fish.
38. Ancient dye.
39. Farm building.
41. Exchange for money.
42. A period.
44. Destiny.
46. Not a bird, but does fly.

This month's crossword puzzle will be found to follow the lines of previous ones set on this page, all of which have proved remarkably popular. There are no traps or alternative solutions. The clues are all straightforward, and every word used, apart from names, can be found in a standard dictionary.

There are two sections in the competition, for Home and Overseas readers respectively, and in each prizes of 21/–, 15/– and 10/6 will be awarded for the best solutions. If necessary the judges will take neatness and novelty into consideration when making their decisions.

Entries should be addressed "*May Crossword, Meccano Magazine, Binns Road, Liverpool 13.*" The closing date in the Home Section is 30th June; Overseas Section, 29th September.

What Aircraft are These?

The aircraft competition in the December 1950 "*M.M.*" proved very popular, so here is another one, but in a different form. Below we give twelve short sentences or phrases, each of which is a pointer to the name of a type of British or American aircraft, and competitors are asked to find the names to which these clues lead. In their entries they are also asked to identify the machines completely by giving the nationality, maker's name and the duty or duties for which the machine concerned has been designed.

1. **Famous explorer**
2. **Heavy one-edged sword**
3. **Generally within sound of the sea**
4. **Gone almost in a flash**
5. **Boss of the world**
6. **Wild horse ready for combat**
7. **Greek name of Jupiter's messenger**
8. **Fast and furious**
9. **Everywhere, in fact**
10. **In the forefront of endeavour**
11. **Decidedly sinister**
12. **Ancient Sun-god**

As usual the contest is in two sections, one for Home readers and the other for readers Overseas. In each of these sections there will be prizes of 21/–, 15/– and 10/6 for the three best entries in order of merit, and if necessary the judges will take the neatness and originality of presentation into account.

Entries should be written on one side of the paper only, and addressed "*May Aircraft Names Contest, Meccano Magazine, Binns Road, Liverpool 13.*" Closing dates: Home Section, 30th June; Overseas Section, 29th September.

May Photographic Contest

The fifth of our 1951 series of photographic contests is a general one, in which we invite readers to send in prints of any subject. There are only two conditions: 1, that the photograph must have been taken by the competitor, and 2, that on the back of each print must be stated exactly what the photograph represents.

The Competition will be in two sections, A for readers aged 16 and over, and B for those under 16. Each competitor must state in which section his photograph is entered. There will be separate Overseas Sections, and in each section prizes of 21/–,15/– and 10/6 will be awarded. Entries should be addressed "*May Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13.*" Closing dates: Home Section, 31st May; Overseas Section, 31st August.

Competition Results and Solutions

HOME

DECEMBER 1950 ADVERTISEMENT CONTEST

1st Prize: N. J. Legg, Wembley. 2nd Prize: C. J. Millar, London S.W.4. 3rd Prize: E. Bellamy, Sheffield. Consolation Prizes: T W. Boulton, Stoke-on-Trent; G. W. A. Fogarty, Portadown; J. G. Grant, Newport; B. Wood, Mansfield.

DECEMBER 1950 AIRCRAFT CONTEST

1st Prize: M. P. Pullin, Trowbridge. 2nd Prize: M. J. Reynolds, Ilford. 3rd Prize: R. J. Worman Bridgwater. Consolation Prizes: R. B. Monk, Sevenoaks; G. L. Jones, Bristol 6; R. S. Clarke, Leeds.

JANUARY 1951 PHOTOGRAPHIC CONTEST

1st Prize, Section A: G. Ogilvie Edinburgh 4; Section B: P. Clifford, Wembley. 2nd Prize, Section A: C. W. Hart, Wembley; Section B: L. Wilkinson, Preston. 3rd Prize, Section A: F. Arden, Runcorn; Section B: M. Robinson, Harrow. Special Editorial Prize, Section A: E. Emrys Jones, Old Colwyn. Consolation Prizes, Section A: J. R. Wooldridge, Stanmore; C. E. Willits, North Shields; S. S. Pethybridge, Newton Abbot; Section B: I. A. A. MacGregor, Westward Ho; R. J. Lewis, Bath; H. D. Shephed, Sutton, J. Bradley, Willenby; I. Spoor St. Germans.

OVERSEAS

SEPTEMBER 1950 HIDDEN PROVERBS CONTEST

1st Prize: P. Linfoot, R.A.F. Heany, S. Rhodesia. 2nd Prize: J. E. Adetora, Zaria, B.W.A. 3rd Prize: R. Burton, Dublin, Eire. Consolation Prizes: J. D'Arcy, Berne, Switzerland; R. Turner, Auckland, N.Z.

SEPTEMBER 1950 RAILWAY CONTEST

1st Prize: A. Day, Cairns, Australia. 2nd Prize: J. K. F. Bamford, Capetown, S. Africa. 3rd Prize: A. Mount, Montreal, Canada. Consolation Prizes: B. Hudson, Bombay, India; D. A. Bimpson, Waterford, Eire; T. Roberts, Penang, Malaya.

SEPTEMBER 1950 PHOTOGRAPHIC CONTEST

1st Prize, Section A: J. T. Harper, Durban, S. Africa; Section B: B. Simpson, Georgetown, Br. Guiana. 2nd Prize, Section A: D. McLellan, Taranaki, N.Z.; Section B: R. A. Linski, Louisville, U.S.A.; 3rd Prize, Section A: J. W. M. McCulloch, Tauranga, N.Z.; Section B: I. F. Butters, Cooktown, Australia. Consolation Prizes: L. F. Jones, Durban, S. Africa; K. Ferguson, Tramore, Eire; K. C. Payne, Luanshya, N. Rhodesia; L. Clare, Bray, Eire; T. M. Thompson. Montreal, Canada.

OCTOBER 1950 CITY SQUARE CONTEST

1st Prize: G. Fisher, Auckland, N.Z. 2nd Prize: J. Urli, Pretoria, S. Africa. 3rd Prize: M. George, Melville, W. Australia. Consolation Prizes: R. S. Banajee, Bombay 7, India; D. E. Yeates, Gibraltar; C. T. M. Onslow, Kenya, E. Africa.

OCTOBER 1950 WAGON PARTS CONTEST

1st Prize: D. J. R. O'Shea, Mallow, Eire. 2nd Prize: P. Mills, Ingelwood, W. Australia. 3rd Prize: A. E. Russouw, Pietermaritzburg, S. Africa. Consolation Prizes: P. O'Neill, Laytown, Eire; D. C. Brown, Bombay, India.

OCTOBER 1950 PHOTOGRAPHIC CONTEST

1st Prize, Section A: D. Gray, Singapore; Section B: J. L. Bellis, Madrid, Spain. 2nd Prize, Section A: A. W. Robinson, Lincoln, U.S.A.; Section B: P. M. Lyons. Heidelberg, Germany. 3rd Prize, Section A: R. F. Marsh, Galle, Ceylon; Section B: J. A. M. Queen, Dublin, Eire. Consolation Prizes: F. Suhayb, Colombo 10, Ceylon; D. Searson, Salisbury, S. Rhodesia; W. Barry, Thika, E. Africa; B. K. Bhargava, Malhura, India; C. Whittington Melbourne Australia.

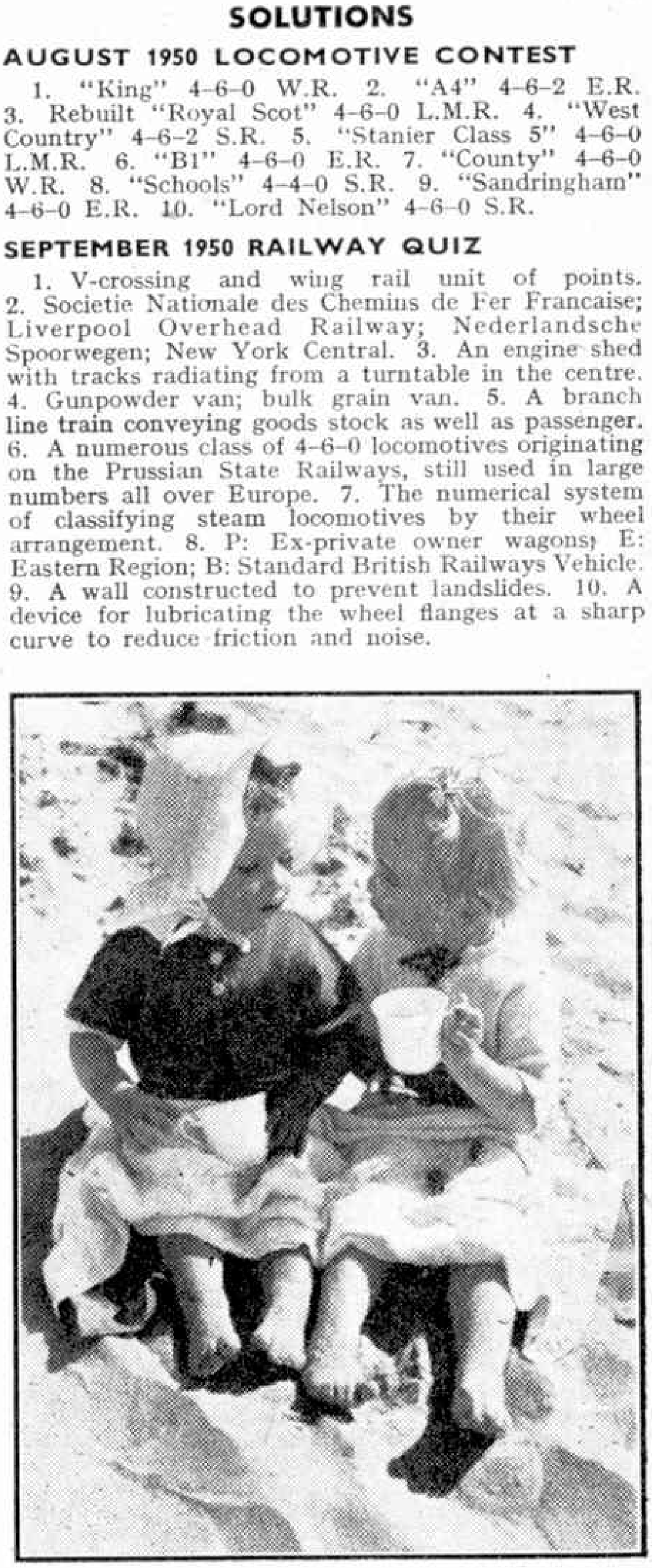
SOLUTIONS

AUGUST 1950 LOCOMOTIVE CONTEST

1. "King" 4-6-0 W.R. 2. "A4" 4-6-2 E.R. 3. Rebuilt "Royal Scot" 4-6-0 L.M.R. 4. "West Country" 4-6-2 S.R. 5. "Stanier Class 5" 4-6-0 L.M.R. 6. "B1" 4-6-0 E.R. 7. "County" 4-6-0 W.R. 8. "Schools" 4-4-0 S.R. 9. "Sandringham" 4-6-0 E.R. 10. "Lord Nelson" 4-6-0 S.R.

SEPTEMBER 1950 RAILWAY QUIZ

1. V-crossing and wing rail unit of points. 2. Societie Nationale des Chemins de Fer Francaise; Liverpool Overhead Railway; Nederlandsche Spoorwegen; New York Central. 3. An engine shed with tracks radiating from a turntable in the centre. 4. Gunpowder van; bulk grain van. 5. A branch line train conveying goods stock as well as passenger. 6. A numerous class of 4-6-0 locomotives originating on the Prussian State Railways, still used in large numbers all over Europe. 7. The numerical system of classifying steam locomotives by their wheel arrangement. 8. P: Ex-private owner wagons; E: Eastern Region; B: Standard British Railways Vehicle. 9. A wall constructed to prevent landslides. 10. A device for lubricating the wheel flanges at a sharp curve to reduce friction and noise.



"LITTLE GOSSIPS." An amusing holiday photograph taken by G. Ogilvie, Edinburgh. Awarded 1st Prize in the January 1951 Photographic Contest, Section A.

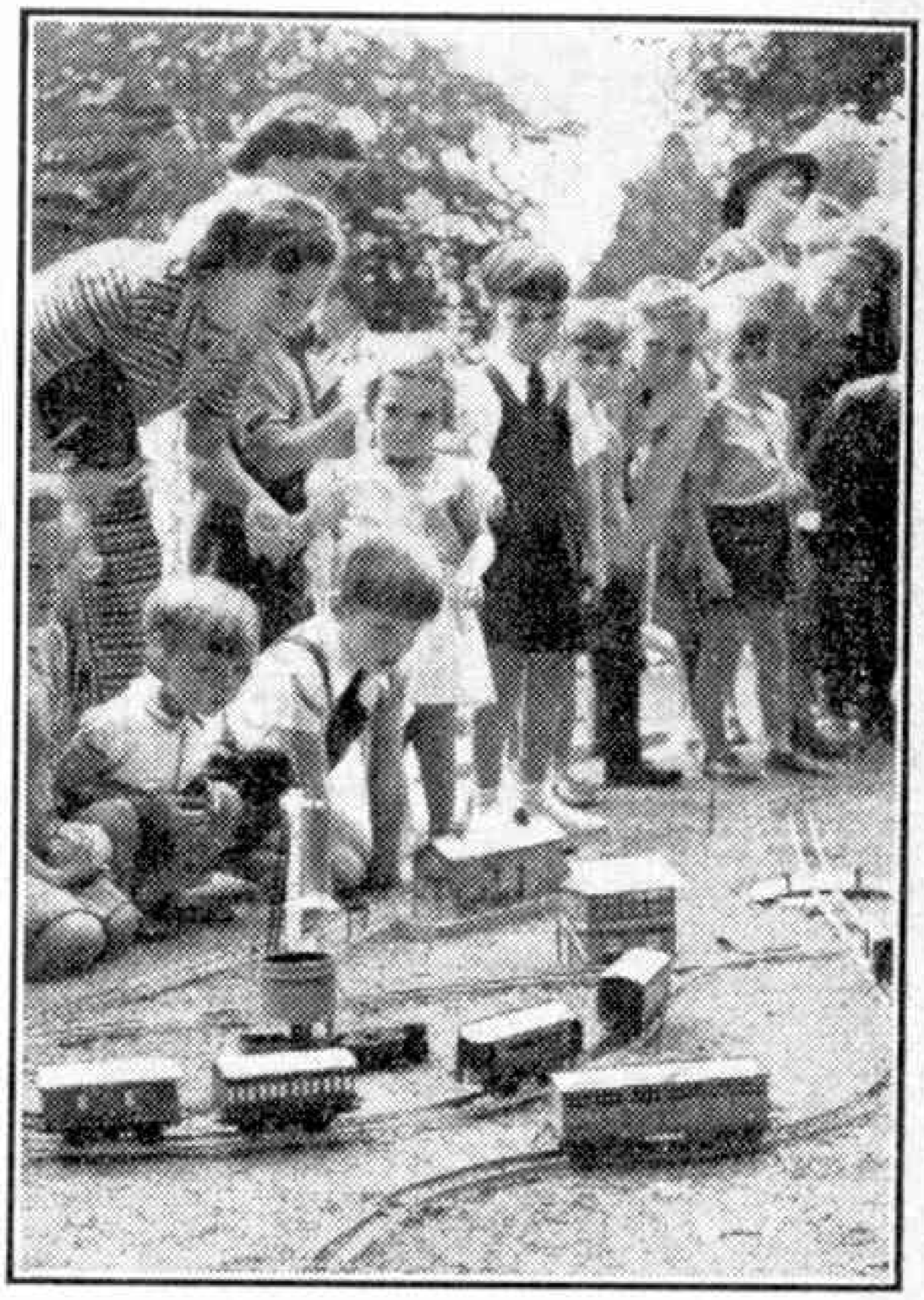
Saving the Alaskan Sea Otters—(*Cont. from p. 203*)

are the sea otters' two worst enemies. The otters are constantly alert for them, occasionally shading their eyes from the glare of the sun with their paws to look for the single large fin of a killer cutting through the water or to spot man's boats approaching.

The sea otter has so many of the characteristics or mannerisms of human beings that he is often called "the child of the sea" or "old man of the sea." The two names are not as contradictory as they first appear. Although the 55-in. long 50-lb. adult looks like an old man, with grizzled hair on his head and shoulders and a full, bristly moustache, he lives and plays like a child. Although not as lithe a swimmer as the river otter, he undulates through the water with a scissors kick, now and then rolling over on his back to kick himself along with one foot, his fore paws complacently resting on his chest.

The otter's chest also serves as his table. On it he spreads sea urchins as he tears them apart. While nibbling one tasty bit he is apt to lose another to the floating sea gull that lazily swims about the "table" looking for an unguarded piece of food. After finishing lunch, the otter rolls over a few times and scrubs himself on the head and neck with his paws.

No mother of the wild is more careful of her young than the sea otter parent with her single kit or pup. For a large share of the time the little otter rests on his mother's chest, receiving a great deal of kissing and fondling. In an emergency, the mother tucks her pup under one arm and dives into the "jungle" of kelp to seek safety. The female sea otter is also like a human mother in that she will not hesitate to spank her little one on occasion. Should the pup, while learning to swim, fail to dive under a crest of a breaking wave, he could be killed on the rocks. Until this lesson is learned, the mother will thrash her crying pup, although no doubt this hurts her worse than it does him!



Interested spectators watching the Hornby railway of "M.M." reader Geoffery Chandler, Rodborough, Nr. Stroud, Glos., that attracted great attention at a local church Fete. Two engines were used in turn and there was a good show of rolling stock and accessories.

A Merchant Ship's Trials—(*Continued from page 216*)

These consist of swinging the rudder from "hard over port" to "hard over starboard" and back, and timing the traverse, and of measuring the diameter of the "turning circle" of the ship at full speed.

When the trials are eventually complete, the vessel returns to her anchorage off the shipyard. The ceremony of handing over and changing flags is then performed, and the vessel is "accepted in good condition and working order" from the builder and becomes the legal property—for the first time—of her owners.

So as we come ashore in the tender we see our ship lifting anchor and making ready to get under way to her first port of loading "under her own steam." One more successful ship is in service.

The results of the trial are carefully analysed and checked, and always a little—sometimes more than a little—is learned from each ship. Such lessons are turned to good advantage when a new ship is beginning her life at the back of an owner's mind, perhaps years before she too is ready for "sea trials."

The Kremlin—Inside and Out—(*Cont. from page 221*)

and place of execution of ancient Moscow. To-day, it is the scene of great parades on May Day and other anniversaries. It is approximately nine hundred yards in length, and was the scene of some severe fighting during the revolution.

To obtain the best view of the Kremlin, one should cross the Moscow River by one of the nearest of the five bridges, and look back at it from the river side. There it stretches, a line of trees running along the wall, above which are cupolas and spires and glimmering roofs, some of them gilded, all beautiful, and often softly veiled by the mist. Outwardly, it has little that suggests the terrible, yet in its long history it has seen all the drama of power and passion.

I don't suppose I shall ever see the Kremlin again, but I am glad I have seen it once. All round is beauty, in architecture, in colour, in location, for Moscow in the spring can be very beautiful.

Britain's New Sea Power—(*Continued from page 200*)

both engines for take-off or in combat, but can switch off one of them in flight to increase its endurance on anti-submarine patrol, when high speed is unwanted.

With such magnificent aircraft to equip its fighting units, the Royal Navy has an effective answer to those who claim that the days of Britain's sea power are over. Still newer developments, of which recent experiments with undercarriageless fighters flown from a rubber-decked carrier may give a hint, will show that the Royal Navy lacks none of the inspiration and pioneer spirit that has made it invincible for eleven centuries.

"BACK NUMBERS OF THE M.M."

A few copies of each of the following issues, price 8d. each are now available: August, September, November 1947; March, April, May, June, July, August, October, November, December 1948; January to December 1949.

The issues for February, April, May, June, July, August, September, November and December 1950 also can be supplied, together with all previous issues this year, price 11d. each.

Readers wishing to obtain copies of these issues should write immediately to the Editor, "Meccano Magazine," Binns Road, Liverpool 13, enclosing a Postal Order.

Fireside Fun

"Stranger: "I've come here to make an honest living."

Native: "Well, there's not much competition."

• • • •

"What do you expect to get with that bait?"

"Dogfish!"

• • • •

"How many of you Scouts," inquired the scoutmaster, "have done your good deed for to-day?" All except four answered, "I did!"

The Scoutmaster shook his head, "We can't have that, boys. You four must go out and do your good deed immediately." In a few minutes the boys reappeared, smiling broadly.

"What did you do?"

"We helped an old lady across the street."

"Did it take all four of you to help one old lady across the street?"

"Yes. She didn't want to go."

• • • •

Shopper: "Look. There's a ladder in these stockings I've just bought."

Harassed Assistant: "Well, what do you expect for 2/11? A marble staircase?"

• • • •

"Now there is the Red Sea, the White Sea, the Black Sea and the Yellow Sea. Brown, can you point to one of these on the map?"

"No, sir."

"And why not, boy?"

"Please, sir, all the seas in my atlas are blue seas."

• • • •

"Listen to Teddy! He learned to play in no time."

"I notice he plays that way."

BRAIN TEASERS

SEPARATE IN THREE MOVES

In the diagram the larger circles represent pennies and the smaller ones halfpennies.

o O o O o

In three moves, each of two adjacent coins, get the two pennies together at one end and the three halfpennies together at the other. S.W.C.

• • • •

THERE IS NOTHING IN THIS

If you add up the four numbers shown on the right you will find that the sum is not 898. Can you put this right in four moves, without altering any figure?

	472
	103
	342
	701
K.J.B.	898

• • • •

SEEN AT A GLANCE

In each of the following sentences a country or city is hidden. Can you find them?

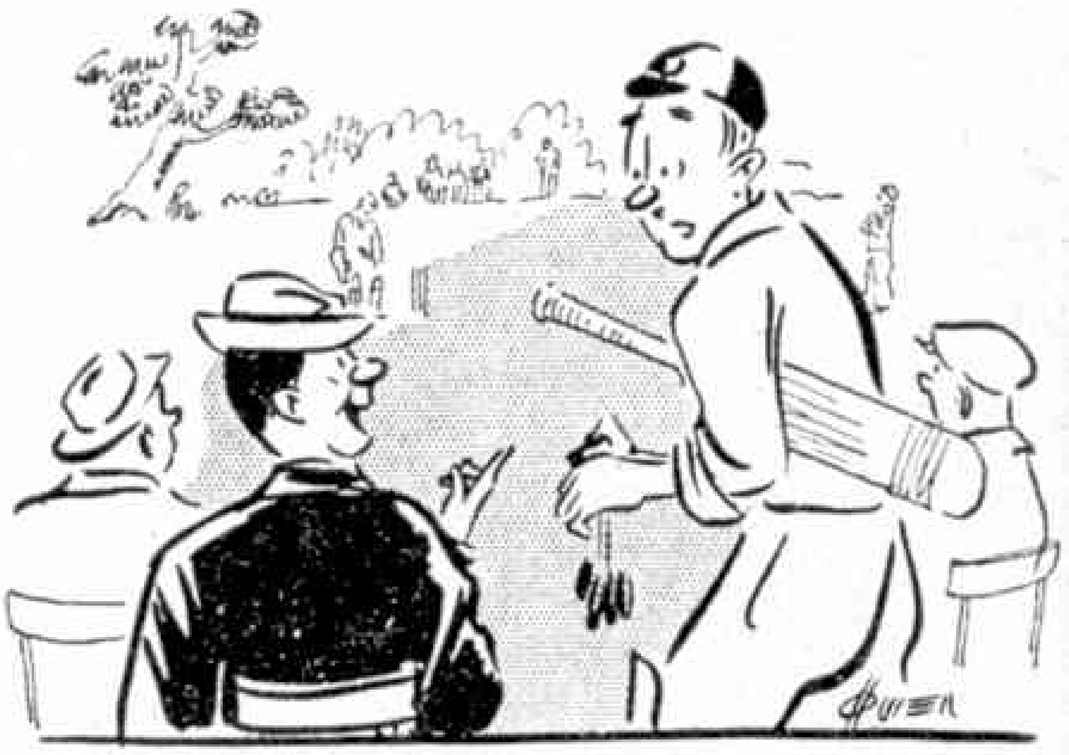
1. Oswald saw Leonard out. 2. Lucy overtook Neville; Don overtook Nigel. 3. Charlie hunted in Northern Australia. 4. Hikers usually look lean. 5. Chase hares into Long Eaton. 6. Never enter with your old rusty keys. B.V.

• • • •

FOUR WORDS WANTED

With the following clues make up a word square, that is a square of 16 letters, the four horizontal lines of which read the same as the four vertical lines. The clues are: Pain, Biblical Character, Deer and Finishes.

• • • •



"I've got a bet on you."

"Shouldn't have told me. I'll get a duck for sure."

"That's what I bet!"

• • • •

SOLUTIONS TO LAST MONTH'S PUZZLES

In the division sum called for in our first puzzle last month the divisor is 13 and the dividend 8290.

The moves in our next puzzle are as follows: Engine and two wagons of B go into loop, leaving three wagons on main line. A moves along line to clear exit from loop, pushing remaining B wagons back. B engine and two wagons leave loop and move along main line. A backs along main line, bringing remaining B wagons with it until it can push these wagons back into loop; it then backs into clear on main line and goes on its way. B train can then be made up again and proceed.

The arrangements of twos in our third puzzle are as follows:

$$\frac{2}{2+2}; \qquad 2-\frac{2}{2}; \qquad \frac{2+2}{2}$$

The five names in our last puzzle are HUTTON, MERCER, HARRIS, BEDSER and CAREY.

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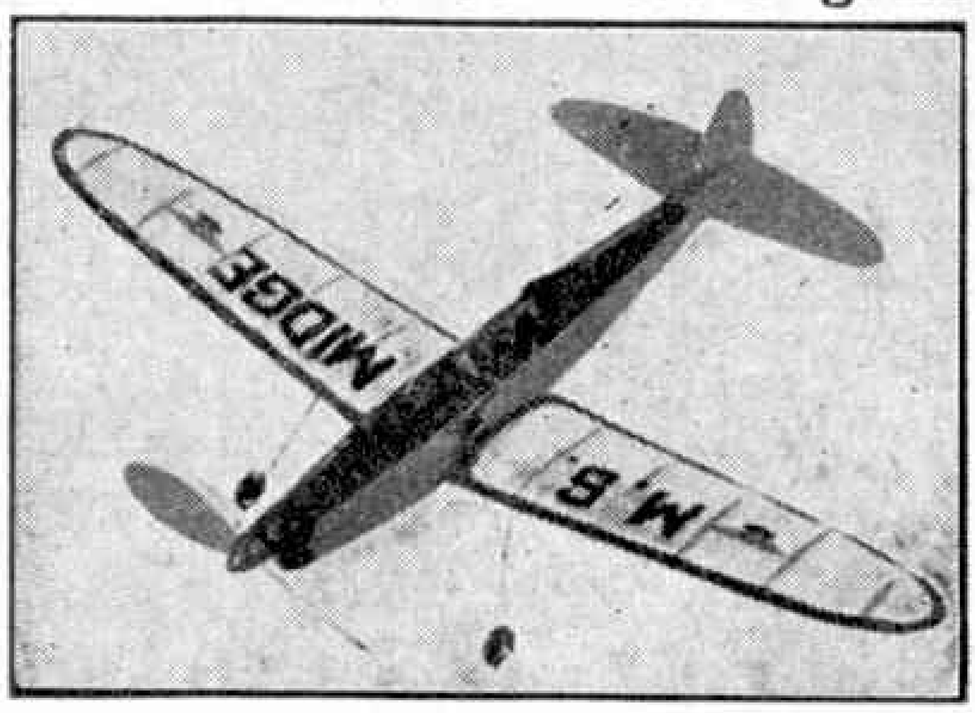

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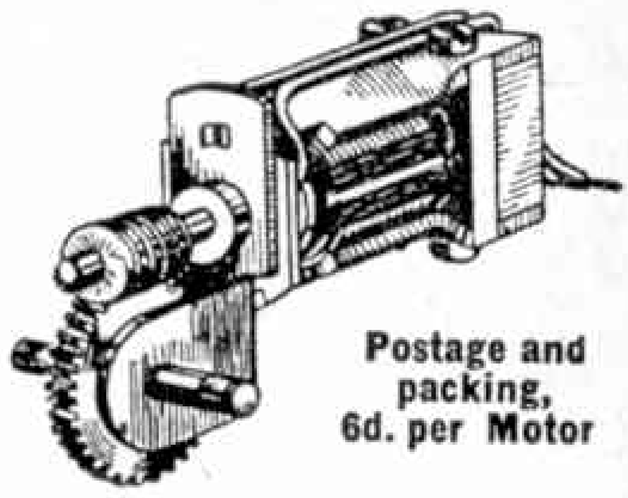

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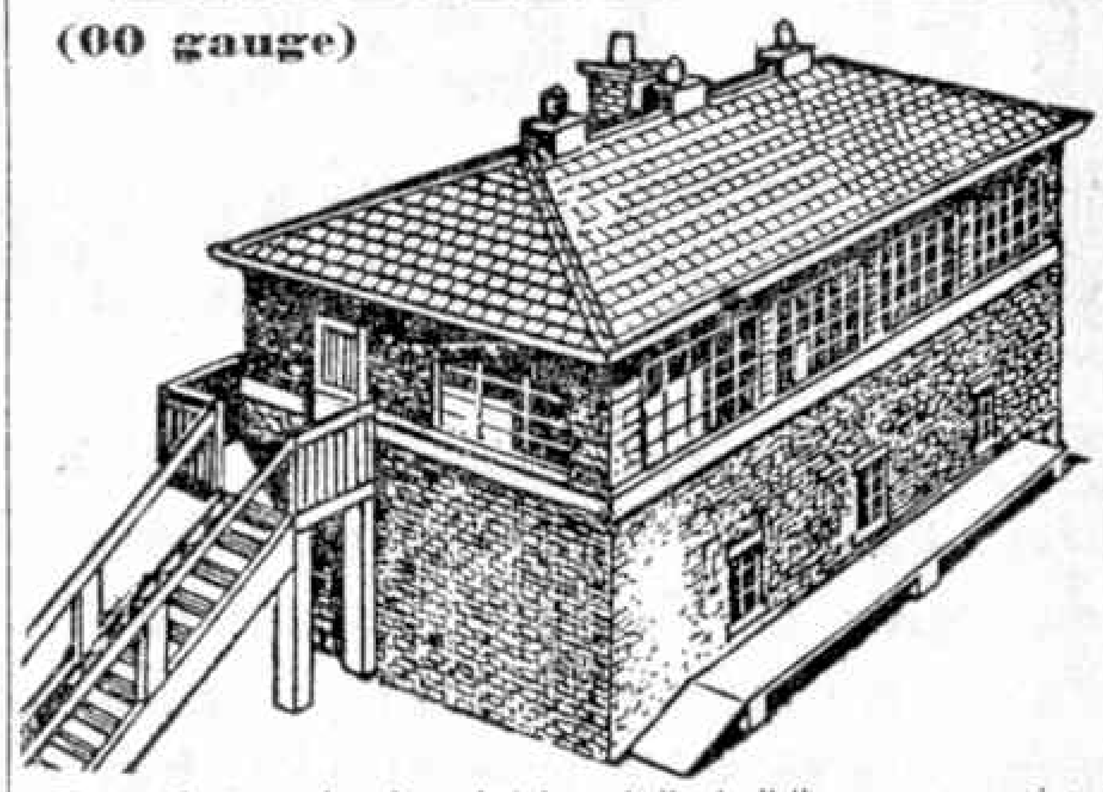

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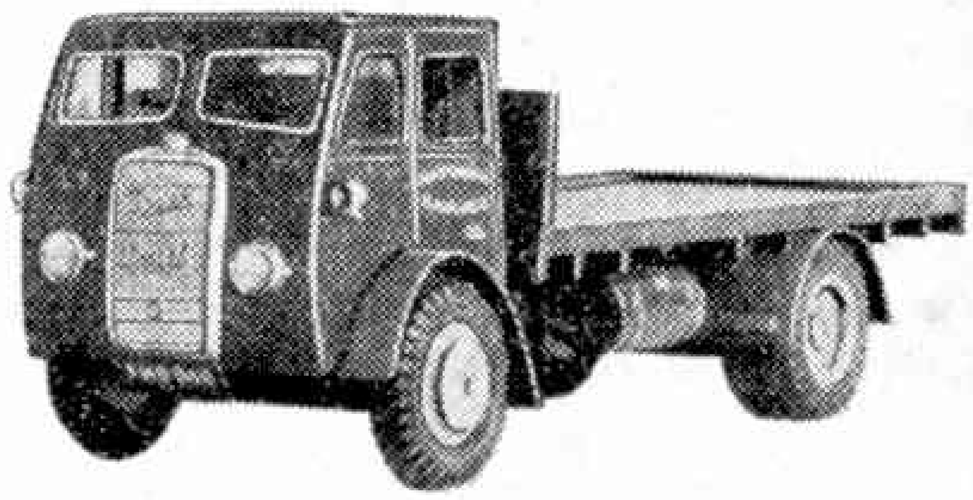

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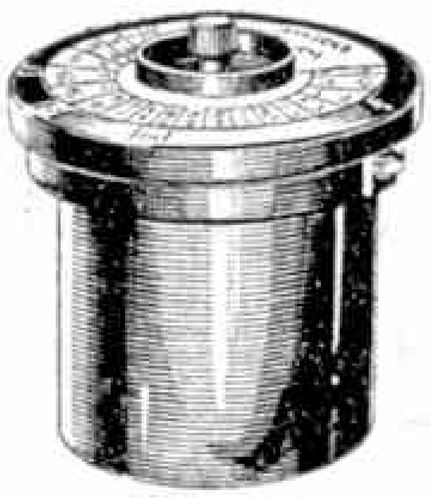

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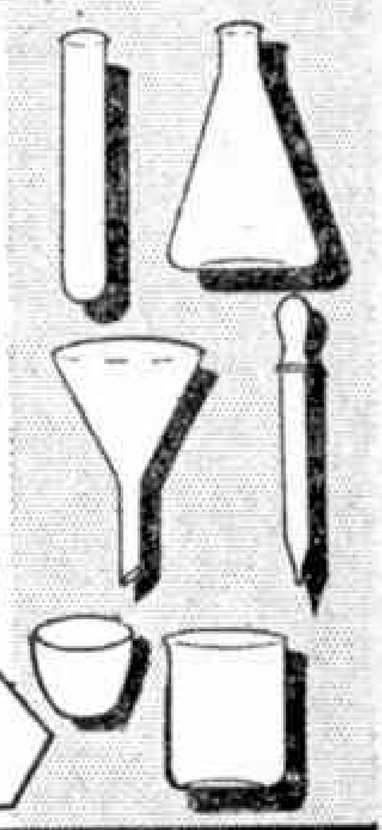

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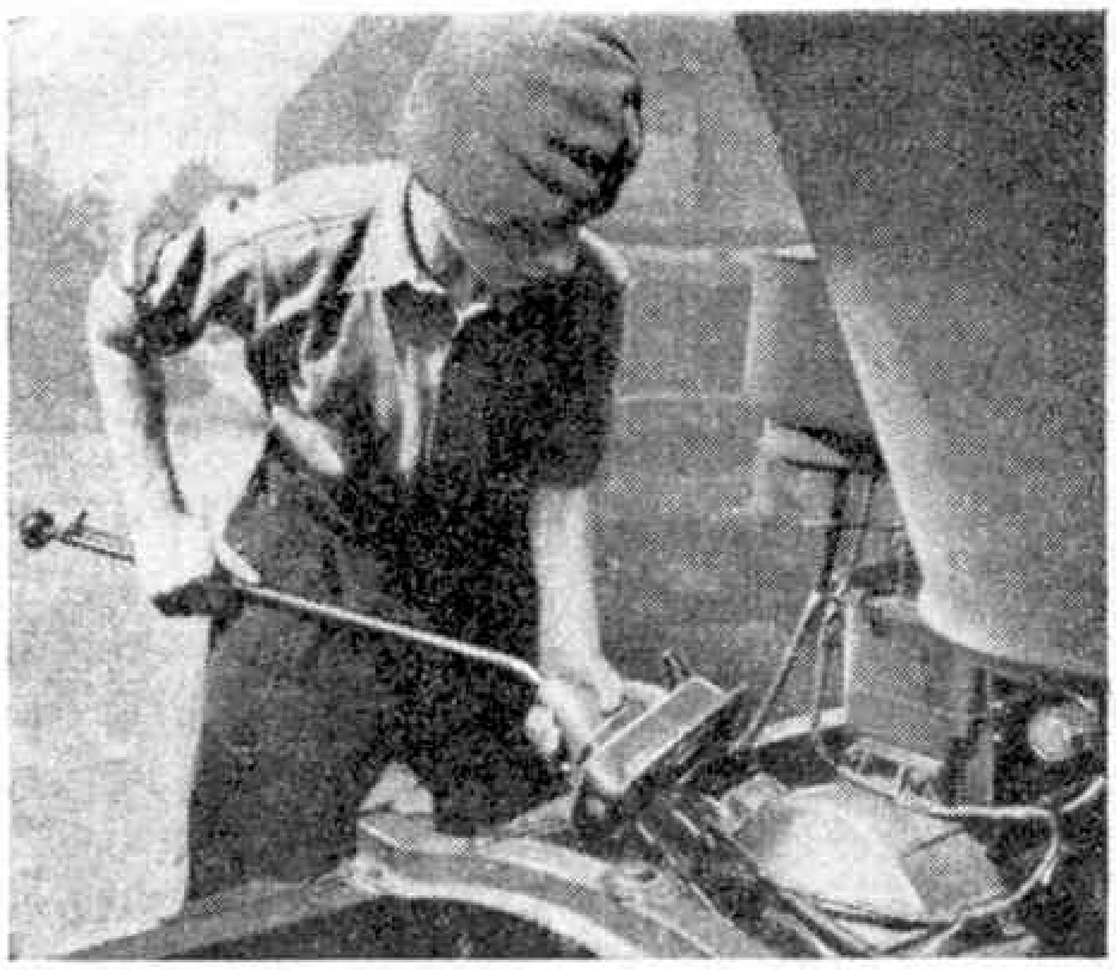

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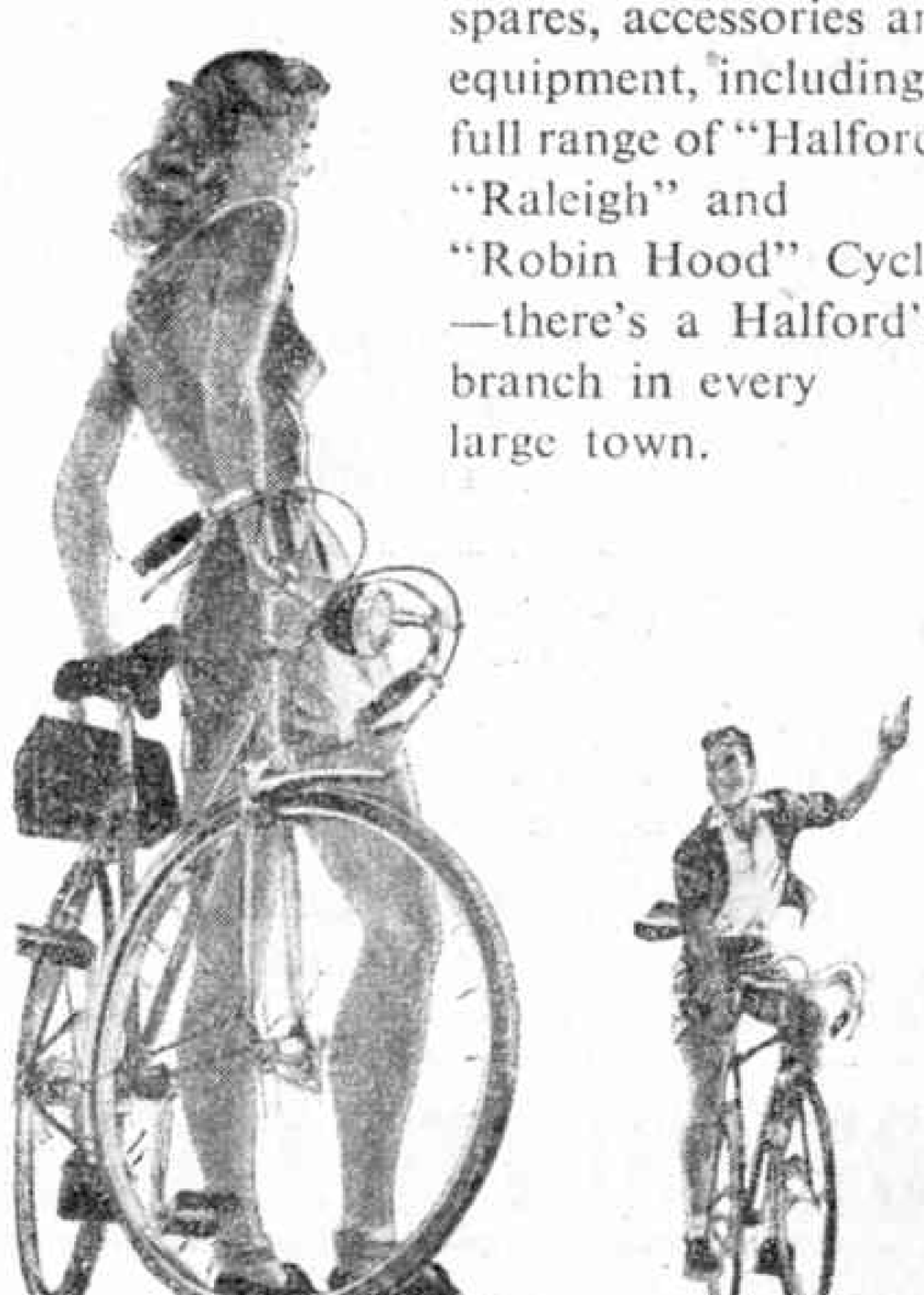

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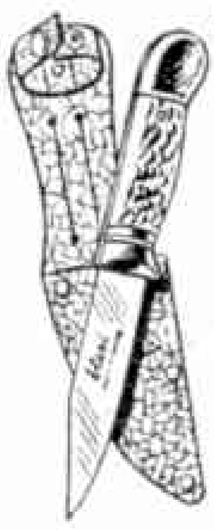

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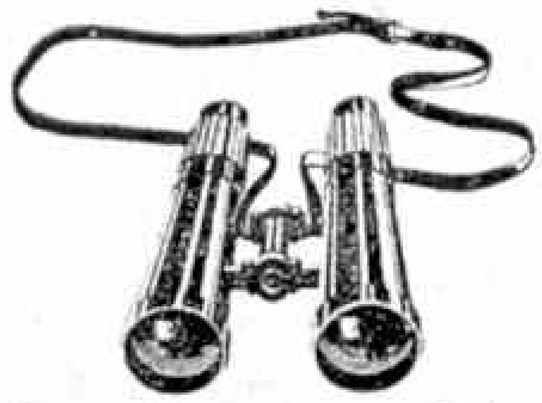

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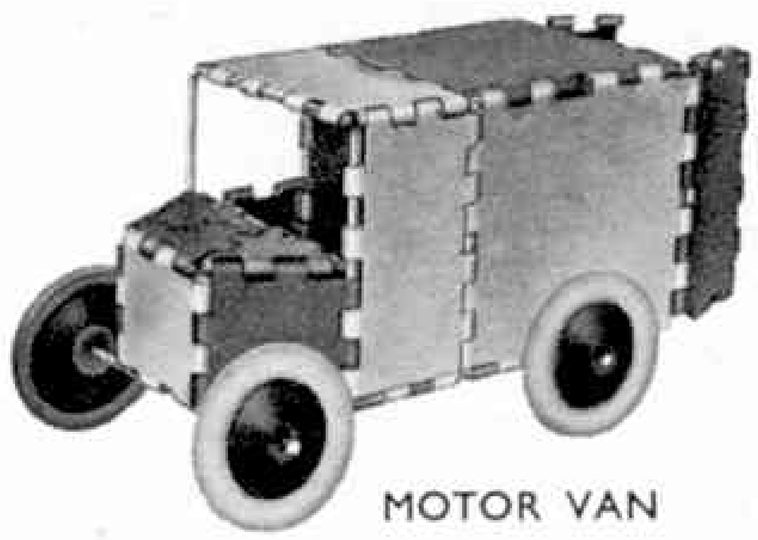

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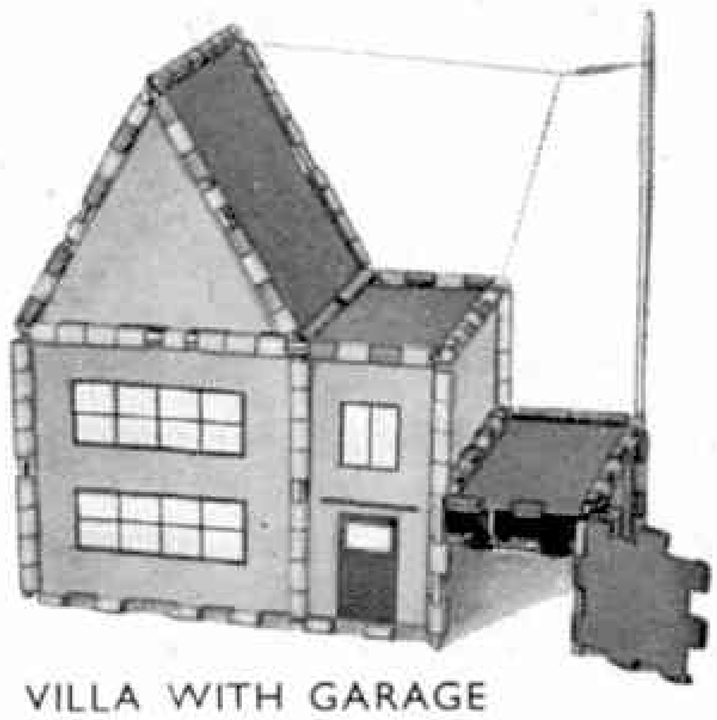

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